

Final Regulation Order

California Code of Regulations, Title 13, Division 3

Chapter 14. Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines

Note: The pre-existing regulation text is set forth below in normal type. The amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions.

Amend sections 2700 through 2707, 2709, and 2710 to read as follows:

§ 2700. Applicability.

These procedures apply to market-ready in-use strategies which, through the use of sound principles of science and engineering, control emissions of particulate matter (PM) and oxides of nitrogen (NOx) from diesel-fueled diesel engines. These strategies may include but are not limited to, diesel particulate filters, diesel oxidation catalysts, fuel additives, selective catalytic reduction systems, exhaust gas recirculation systems, and alternative diesel fuels. To be verified under these procedures, a strategy must either reduce emissions of PM or both PM and NOx. A strategy that reduces emissions of NOx alone may be verified only for use with on-road diesel engines certified to a PM emissions standard of 0.01 grams per brake-horsepower hour (g/bhp-hr) or less, or off-road diesel engines certified to a PM emissions standard of 0.03 g/bhp-hr or less. A strategy that reduces emissions of NOx alone may be verified for use with other diesel engines provided that they are not regulated by ARB in-use fleet regulations or Airborne Toxic Control Measures that require PM emissions control, or provided that they would otherwise potentially not be retrofit with PM emission control strategies.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700 Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; and Title 17 California Code of Regulations Section 93000

§ 2701. Definitions.

* * * * *

(13) “Days” when computing any period of time, means normal working days on which the Air Resources Board is open for business unless otherwise noted.

~~(13)~~(14) “Diesel emission control strategy” or “Diesel emission control system” means any device, system, or strategy employed with an in-use diesel vehicle or piece of equipment that is intended to reduce

emissions. Examples of diesel emission control strategies include, but are not limited to, particulate filters, diesel oxidation catalysts, selective catalytic reduction systems, fuel additives used in combination with particulate filters, alternative diesel fuels, and combinations of the above.

~~(14)~~(15) “Diesel Emission Control Strategy Family Name:” ~~See~~ As defined in Section 2706(j)(2).

~~(15)~~(16) “Diesel Engine” means an internal combustion engine with operating characteristics significantly similar to the theoretical diesel combustion cycle. The primary means of controlling power output in a diesel cycle engine is by limiting the amount of fuel that is injected into the combustion chambers of the engine. A diesel cycle engine may be petroleum-fueled (i.e., diesel-fueled) or alternate-fueled.

~~(16)~~(17) “Diesel-fueled auxiliary power system” or “APU” means any device that is permanently dedicated to the vehicle on which it is installed and provides electrical, mechanical, or thermal energy to the primary diesel engine, truck cab, and/or sleeper berth, bus passenger compartment or any other commercial vehicle’s cab, as an alternative to idling the primary diesel engine.

~~(17)~~(18) “Distributor” means any person or entity to whom a diesel emission control strategy is sold, leased or supplied for the purposes of resale or distribution in commerce.

~~(18)~~(19) “Donor Vehicle/engine” means any vehicle/engine whose installed diesel emission control strategy device has been removed for the purpose of re-designation or component swapping.

~~(19)~~(20) “Durability” means the ability of the applicant’s diesel emission control strategy to maintain a level of emissions below the baseline and maintain its physical integrity over some period of time or distance determined by the Executive Officer pursuant to these regulations. The minimum durability testing periods contained herein are not necessarily meant to represent the entire useful life of the diesel emission control strategy in actual service.

~~(20)~~(21) “Emergency Standby Engine” means a diesel engine operated solely for emergency use, except as otherwise provided in airborne toxic control measures adopted by the ARB.

~~(21)~~(22) “Emergency Use” means using a diesel engine to provide electrical power or mechanical work during any of the following events and subject to the following conditions:

- (A) The failure or loss of all or part of normal electrical power service or normal natural gas supply to the facility,
- (B) The failure of a facility’s internal power distribution system,
- (C) The pumping of flood water or sewage to prevent or mitigate a flood or sewage overflow,
- (D) The pumping of water for fire suppression or protection,
- (E) The powering of ALSF-1 and ALSF-2 airport runway lights under category II or III weather conditions,

(F) Other conditions as specified in airborne toxic control measures adopted by the ARB.

~~(22)~~(23) "Emission control group" means a set of diesel engines and applications determined by parameters that affect the performance of a particular diesel emission control strategy. The exact parameters depend on the nature of the diesel emission control strategy and may include, but are not limited to, certification levels of engine emissions, combustion cycle, displacement, aspiration, horsepower rating, duty cycle, exhaust temperature profile, and fuel composition. Verification of a diesel emission control strategy and the extension of existing verifications are done on the basis of emission control groups.

~~(23)~~(24) "End user" means any individual or entity that owns or operates a vehicle or piece of equipment that has a verified diesel emission control ~~system~~ strategy installed.

~~(24)~~(25) "Executive Officer" means the Executive Officer of the Air Resources Board or the Executive Officer's designee.

~~(25)~~(26) "Executive Order" means the document signed by the Executive Officer that specifies the verification level of a diesel emission control strategy for an emission control group and includes any enforceable conditions and requirements necessary to support the designated verification.

~~(26)~~(27) "Fuel Additive" means any substance designed to be added to fuel or fuel systems or other engine-related systems such that it is present in-cylinder during combustion and has any of the following effects: decreased emissions, improved fuel economy, increased performance of the entire vehicle or one of its component parts, or any combination thereof; or assists diesel emission control strategies in decreasing emissions, or improving fuel economy or increasing performance of a vehicle or component part, or any combination thereof. Fuel additives used in conjunction with diesel fuel may be treated as an alternative diesel fuel. See Section 2701 (a)(3) .

~~(27)~~(28) "Hot Start" means the start of an engine within four hours after the engine is last turned off. The first hot start test run should be initiated 20 minutes after the cold start for Federal Test Procedure testing following Section 86.1327-90 of the Code of Federal Regulations, Title 40, Part 86.

~~(28)~~(29) "Installer" means any individual or entity that equips any vehicle, engine or equipment with a diesel emission control strategy.

~~(29)~~(30) "Locomotive" means a self-propelled piece of on-track equipment designed for moving or propelling cars that are designed to carry freight, passengers or other equipment, but which itself is not designed or intended to carry freight, passengers (other than those operating the locomotive) or other equipment.

~~(30)~~(31) "Marine Engine" means a compression ignition engine designed and used to provide propulsion or auxiliary power on water craft such as recreational boats, ocean going vessels, or commercial harbor craft.

(32) "Market-ready" means ready for introduction into commerce. A market-ready diesel emission control strategy is not a prototype and requires no design modifications, part changes, revisions to control logic, or other changes prior to being sold to end-users for commercial use. All components that are necessary for a market-ready diesel emission control strategy to function properly are also commercially available.

~~(34)~~(33) "Portable Engine" means an engine designed and capable of being carried or moved from one location to another, except as defined in section 2701(a)(33). Engines used to propel mobile equipment or a motor vehicle of any kind are not portable. Indicators of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. A portable engine cannot remain at the same facility location for more than 12 consecutive rolling months or 365 rolling days, whichever occurs first, not including time spent in a storage facility. If it does remain at the facility for more than 12 months, it is considered to be a stationary engine. The definitions in Title 13 California Code of Regulations section 2452(g) and section 2452(x) are incorporated by reference herein.

(34) "Recall" means an inspection, repair, adjustment, replacement, or modification program required by the Executive Officer and initiated and conducted by the manufacturer, applicant, or its agent or representative for which direct notification of the end-user is necessary to remedy: the failure of a diesel emission control strategy to meet the conditions for passing in-use compliance testing as defined in Section 2709(k) of this Procedure, a warrantable condition, or to address the failure of an operational feature (e.g. strategy used to signal high backpressure). Recalls must address all diesel emission control strategies sold or leased in the California market within a specific diesel emission control strategy family and may include all diesel emission control strategies sold as California verified.

~~(32)~~(35) "Re-designation" means the removal, within the same common ownership fleet, of a complete used verified diesel emission control strategy from an appropriate engine in a vehicle/application and installation to another appropriate engine in a vehicle/application that meets the terms and conditions of the diesel emission control strategy Executive Order.

~~(33)~~(36) "Regeneration" in the context of diesel particulate filters, means the periodic or continuous combustion of collected particulate matter that is trapped in a particulate filter through an active or passive mechanism. Active regeneration requires a source of heat other than the exhaust itself to regenerate the particulate filter. Examples of active regeneration strategies include, but are not limited to, the use of fuel burners and electrical heaters. Passive regeneration does not require a source of heat for regeneration other than the exhaust stream itself. Examples of passive regeneration strategies include, but are not limited to, the use of fuel additives and the catalyst-coated particulate filter. In the context of

NOx reduction strategies, “regeneration” means the desorption and reduction of NOx from NOx adsorbers (or NOx traps) during rich operation conditions.

~~(34)~~(37) “Repower” means to replace the engine in a vehicle or piece of equipment with another engine that meets a subsequent engine emissions standard (e.g., replacing a Tier 1 engine with a Tier 3 or later engine).

~~(35)~~(38) “Revoke” means to cancel the verification status of a diesel emission control strategy. If a diesel emission control strategy’s verification status is revoked by the Executive Officer, the applicant must immediately cease and desist selling the diesel emission control strategy to end-users.

(39) “Rubber-tired Gantry Crane or RTG Crane” means an off-road overhead cargo container crane with the lifting mechanism mounted on a cross-beam supported on vertical legs which run on rubber tires.

~~(36)~~(40) “Seller” means any person or entity that sells, leases or supplies a diesel emission control strategy.

~~(37)~~(41) “Stationary Engine” means an engine that is designed to stay in one location, or remains in one location. An engine is stationary if any of the following are true:

(A) The engine or its replacement is attached to a foundation, or if not so attached, will reside at the same location for more than 12 consecutive months. Any engine that replaces engine(s) at a location, and is intended to perform the same or similar function as the engine(s) being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of all engine(s), including the time between the removal of the original engine(s) and installation of the replacement engine(s), will be counted toward the consecutive time period; or

(B) The engine remains or will reside at a location for less than 12 consecutive months if the engine is located at a seasonal source and operates during the full annual operating period of the seasonal source, where a seasonal source is a stationary source that remains in a single location on a permanent basis (at least two years) and that operates at that single location at least three months each year; or

(C) The engine is moved from one location to another in an attempt to circumvent the residence time requirements [Note: The period during which the engine is maintained at a storage facility shall be excluded from the residency time determination.] The definitions in Title 13 California Code of Regulations section 2452(g) and section 2452(x) are incorporated by reference herein.

~~(38)~~(42) “Transport Refrigeration Unit (TRU)” means a refrigeration system powered by an integral internal combustion engine designed to control the environment of temperature sensitive products that are transported in trucks and refrigerated trailers. TRUs may be capable of both cooling and heating.

- (39)(43) "Unidirectional Device Design and Installation" means that an emission control device must be appropriately designed, manufactured and labeled to prevent reverse flow installation.
- (40)(44) "Used Verified Device" means any verified diesel emission control strategy which has been sold or leased to an end user and installed on an engine/application.
- (41)(45) "Verification" means a determination by the Executive Officer that a diesel emission control strategy meets the requirements of this Procedure. This determination is based on both data submitted or otherwise known to the Executive Officer and engineering judgment.
- (42)(46) "Warrantable Condition" means any condition of the diesel emission control strategy, vehicle, or engine which triggers the responsibility of the applicant to take corrective action pursuant to Section 2707.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700 Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2702. Application Process.

- (a) Overview. Before submitting a final application for the verification of a diesel emission control strategy for use with an emission control group, the applicant must submit a preliminary verification application (pursuant to Section 2702(b)) ~~at the Executive Officer's discretion~~ in the format shown in 2702(d). To obtain verification, the applicant must conduct emission reduction testing (pursuant to Section 2703), durability testing (pursuant to Section 2704), a field demonstration (pursuant to Section 2705) and submit the results along with comments and other information (pursuant to Sections 2706 and 2707) in a final verification application to the Executive Officer, in the format shown on Section 2702(d). If the Executive Officer grants verification of a diesel emission control strategy, it will issue an Executive Order to the applicant identifying the verified emission reduction and any conditions that must be met for the diesel emission control strategy to function properly. After the Executive Officer grants verification of a diesel emission control strategy, the applicant must provide a warranty, conduct in-use compliance testing of the strategy after having sold or leased a specified number of units, and report the results to the Executive Officer (pursuant to Section 2709). A diesel emission control strategy that employs two or more individual systems or components must be tested and submitted for evaluation as one system. A verified diesel emission control strategy may not be installed on an engine with another diesel emission control strategy that is not included in the Executive Order. Applicants seeking verification of an alternative diesel fuel must follow the procedure described in Section 2710.

(b) Preliminary Verification Application. Before formally submitting a final application for the verification of a diesel emission control strategy, the applicant must submit a preliminary verification application ~~at the Executive Officer's discretion.~~ The preliminary application must be submitted with market-ready diesel emission control strategy that is identical in all material respects to the product that will be sold upon receiving verification. This product must also be identical in all respects to any products used to support the verification activity. The submitted diesel emission control strategy must include all parts including, but not limited to, the aftertreatment components, sensors, control logic and algorithms, and the backpressure monitor as well as a complete parts list. Any changes to any part of the strategy including, but not limited to, control logic and algorithms, functionality, materials, catalyst loadings and formulation, hardware, etc., will be deemed not identical and not appropriate for verification purposes. Different sizes of the same strategy will be determined to be identical at the Executive Officer's discretion. For strategies that include multiple sizes of the same part (e.g., the diesel particulate filter), the Executive Officer will specify which size of the part must be submitted. The applicant may petition the Executive Officer to waive the requirement to submit a market-ready diesel emission control strategy in the event the physical size of the diesel emission control strategy makes it impractical to submit (i.e., devices intended to be installed on large stationary generators, gantry cranes or marine applications.) The Executive Officer shall use the information in the preliminary verification application to help determine whether the strategy relies on sound principles of science and engineering to control emissions, the need for additional analyses, and the appropriateness of allowing alternatives to the prescribed requirements. The preliminary verification application must follow the format shown in Section 2702(d) and at a minimum provide the information required in sections 1. through 5., and section 8.A.5, ~~where applicable.~~ In addition, the preliminary verification application must include the following information:

* * * * *

(c) ~~When an applicant submits a preliminary verification application, the Executive Officer shall, within 30 days of its receipt, determine whether the applicant has identified the information necessary to support an application for verification and notify the applicant in writing that it may submit an application for verification. The Executive Officer may suggest modifications to the proposed preliminary verification application to facilitate verification of the diesel emission control strategy. All applications, correspondence, and reports, with the exception of applications based on the use of fuel additives or alternative diesel fuels, locomotive applications, stationary applications, transport refrigeration units, rubber-tired gantry cranes, and marine applications, must be submitted in writing to:~~

CHIEF, HEAVY-DUTY DIESEL IN-USE STRATEGIES BRANCH
AIR RESOURCES BOARD
9480 TELSTAR AVENUE, SUITE 4
EL MONTE, CA 91731

All applications, correspondence, and reports for systems utilizing any form of fuel additive or alternative diesel fuel or intended for locomotives, must be submitted in writing to:

CHIEF, CRITERIA POLLUTANTS BRANCH
AIR RESOURCES BOARD
1001 I STREET
SACRAMENTO, CA 95814

All applications, correspondence, and reports for systems intended for use with stationary applications, transport refrigeration units, rubber-tired gantry cranes, or marine applications must be submitted in writing to:

CHIEF, EMISSIONS ASSESSMENT BRANCH
AIR RESOURCES BOARD
1001 I STREET
SACRAMENTO, CA 95814

- (d) Application Format. The preliminary and final verification applications must be submitted in writing to the address shown in subsection (c) above. Electronic mail and verbal submissions do not constitute acceptable application formats. Supporting data in electronic format may be accepted as part of the application at the discretion of the Executive Officer. The preliminary and final verification applications for a diesel emission control strategy must follow the format shown below. If a section asks for information that is not applicable to the diesel emission control strategy, the applicant must indicate "not applicable." If the Executive Officer concurs with the applicant's judgement that a section is not applicable, the Executive Officer may waive the requirement to provide the information requested in that section. Final verification applications must include all of the information provided in the preliminary verification application as described in Section 2702(b), including any additional information, updates, or changes, and all additional information shown below.

1. Introduction

* * * * *

8. *Appendices*

- A. Laboratory test report information (*for all tests, including incomplete, aborted and failed tests*)
 - A.1 Actual laboratory test data
 - A.2 Plots of engine backpressure and exhaust temperature
 - A.3 Driving traces for chassis dynamometer tests
 - A.4 Quality assurance and quality control information
 - A.5 Testing equipment information and indication that testing equipment meets specifications and calibrations given in procedures required by sections 2703, 2704 and 2710 as appropriate.
- B. Field test information
 - B.1 Engine backpressure and exhaust temperature data (as described in Sections 2704(d)(2) and 2705(c)(1))
 - B.2 Third-party letters or questionnaires describing in-field performance
- C. Signed Statement of Compliance Letter (as described in Sections 2703(l), 2704(m), and 2705(c)(5)).
- ~~G.~~ D. Diesel emission control strategy label
- ~~D.~~ E. Copy of the Owner's Manual (as described in Section 2706(l))
- ~~E.~~ F. Copy of the Installation Manual
- ~~F.~~ G. Sample diesel emission control strategy label (See Section 2706(j))
- ~~G.~~ H. Other supporting documentation

~~(e) Within 30 days of receipt of the preliminary application, the Executive Officer shall notify the applicant whether the application is complete. Preliminary Verification Application Review Process. A preliminary application for verification is reviewed as follows:~~

- (1) The Executive Officer pursuant to Section 2702(b), review of an applicant's preliminary verification application shall not proceed until receipt of a market-ready diesel emission control strategy unless such requirement has been waived.
- (2) Review for Completeness. Within 30 days of receipt of the preliminary application, the Executive Officer shall notify the applicant indicating whether the application is complete.
 - (A) If the preliminary application is not complete, the applicant must submit the missing information within 30 days of the date of the notification. Failure to do so terminates the application process.
 - (B) Within 30 days of receipt of a submittal from the applicant to complete the preliminary application, the Executive Officer shall issue a second notification to the applicant indicating whether the preliminary application is complete.
 - (C) If the preliminary application is not complete, the applicant must submit the missing information within 30 days of the date of the

second notification. Failure to do so terminates the application process.

(D) Within 30 days of receipt of a second submittal from the applicant to complete the preliminary application, the Executive Officer shall issue a third notification to the applicant indicating whether the preliminary application is complete. If, upon review, the Executive Officer determines that the preliminary application is still not complete, the application will be terminated. If the Executive Officer determines that only a minor clarification is needed while reviewing the preliminary application for completeness, the Executive Officer may extend the review time for completeness.

(3) Engineering and Compliance Review. Within 45 days of the date of the notification indicating that the preliminary application is complete, the Executive Officer shall conduct a technical review of the preliminary application and issue a notification to the applicant indicating whether the preliminary application is satisfactory to support development of a test plan approval letter.

(A) If the preliminary application is not satisfactory, the applicant must submit a response addressing all issues raised in the notification within 45 days of the date of the notification. Failure to do so terminates the application process.

(B) Within 45 days of receipt of a submittal from the applicant, the Executive Officer shall issue a second notification to the applicant indicating whether the preliminary application is satisfactory.

(C) If the preliminary application is not satisfactory, the applicant must submit a response addressing all issues raised in the second notification within 45 days of the date of the second notification. Failure to do so terminates the application process.

(D) Within 45 days of receipt of a second submittal from the applicant, the Executive Officer shall issue a third notification to the applicant indicating whether the preliminary application is satisfactory. If, upon review, the Executive Officer determines that the preliminary application is still not satisfactory, the application will be terminated. If the Executive Officer determines that only a minor clarification is needed during the engineering and compliance review, the Executive Officer may extend the review time.

(4) Test Plan Approval Letter. Within 45 days of the date of the notification indicating that the preliminary application is satisfactory, the Executive Officer shall issue a test plan approval letter to the applicant.

(5) If the preliminary application is terminated by the Executive Officer and the applicant wishes to attempt verification again, the applicant must wait at least 30 calendar days before submitting a new, revised preliminary verification application.

(f) Within 60 days after a final application has been deemed complete, the Executive Officer shall determine whether the diesel emission control strategy

merits verification and shall classify it as shown in Table 1: Final Verification Application Review Process. A final application for verification is reviewed as follows:

- (1) The Executive Officer shall not review a final application unless the applicant has first received the following three notifications from the Executive Officer:
 - (A) Notification indicating the preliminary application is complete.
 - (B) Notification indicating the preliminary application is satisfactory.
 - (C) Test plan approval letter.
- (2) Review for Completeness. Within 30 days of receipt of the final application, the Executive Officer shall notify the applicant indicating whether the final application is complete.
 - (A) If the final application is not complete, the applicant must submit the missing information within 30 days of the date of the notification. Failure to do so terminates the application process.
 - (B) Within 30 days of receipt of a submittal from the applicant to complete the final application, the Executive Officer shall issue a second notification to the applicant indicating whether the final application is complete.
 - (C) If the final application is not complete, the applicant must submit the missing information within 30 days of the date of the second notification. Failure to do so terminates the application process.
 - (D) Within 30 days of receipt of a second submittal from the applicant to complete the final application, the Executive Officer shall issue a third notification to the applicant indicating whether the final application is complete. If, upon review, the Executive Officer determines that the final application is still not complete, the application will be terminated. If the Executive Officer determines that only a minor clarification is needed while reviewing the final application for completeness, the Executive Officer may extend the review time for completeness.
- (3) Test Results and Compliance Review. Within 60 days of the date of the notification indicating that the final application is complete, the Executive Officer shall determine whether the diesel emission control strategy merits verification and shall classify it as shown in Table 1:

Table 1. Verification Classifications for Diesel Emission Control Strategies

Pollutant	Reduction	Classification
PM	< 25%	Not verified
		Level 0* (see note below)
	≥ 25%	Level 1
		Level 1 Plus**

	$\geq 50\%$	Level 2
		Level 2 Plus**
	$\geq 85\%$, or ≤ 0.01 g/bhp-hr	Level 3
		Level 3 Plus**
NOx	$< 25\%$	Not verified
	$\geq 25\%$	Mark 1
	$\geq 40\%$	Mark 2
	$\geq 55\%$	Mark 3
	$\geq 70\%$	Mark 4
	$\geq 85\%$	Mark 5

*A diesel emission control strategy that reduces emissions of PM by less than 25 percent may be verified as a Level 0 strategy if it reduces emissions of NOx by at least 25 percent and meets the other criteria in section 2700.

**The diesel emission control strategy complies with the 20 percent NO₂ limit before January 1, 2009 (and after January 1, 2007).

~~The applicant and the Executive Officer may mutually agree to a longer time period for reaching a decision, and additional supporting documentation may be submitted by the applicant before a decision has been reached. The Executive Officer shall notify the applicant of the decision in writing and specify the verification level for the diesel emission control strategy and identify any terms and conditions that are necessary to support the verification.~~

(4) If the final application is terminated by the Executive Officer and the applicant wishes to attempt verification again, the applicant must wait at least 30 days before submitting a new, revised final application.

(g) Application Termination. If at any point during the review process an applicant's application is terminated, the Executive Officer will cease review of all materials regarding the diesel emission control strategy and associated application. The applicant may submit a new, revised application per Section 2702 (e) – (f) after 30 days of the date of the termination notification. This time is intended to allow the applicant to correct any deficiencies in the application. If the preliminary application was terminated, a resubmitted preliminary application will be reviewed as a new application. The re-submission must address the concerns that caused the termination and must not be identical to the terminated application.

~~(g)~~(h) Extensions of an Existing Verification. If the applicant has verified a diesel emission control strategy with one emission control group and wishes to extend the verification to include additional emission control groups, it may apply to do so using the original test data, additional test data, engineering justification and analysis, or any other information deemed necessary by the Executive Officer to address the differences between the emission control group already verified and the additional emission control group(s). Processing time periods follow sections (e) and (f) above.

~~(h)~~(i) Conditional Extensions of an Existing Verification for On-Road Applications. If an applicant has an ARB verified diesel emission control strategy and wishes to extend the verification to include new on-road emission control groups, the applicant may apply to receive a conditional extension. If the Executive Officer determines that the diesel emission control strategy is technologically sound and appropriate for the intended application, the applicant may be granted conditional extension for up to one year. Upon receiving a conditional extension, the applicant may sell the diesel emission control strategy as a verified product for the duration of the conditional extension period. To obtain full verification, the applicant must complete the requirements set forth by the Executive Officer according to the requirements of the regulation. In granting a conditional extension, the Executive Officer may consider all relevant information including, but not limited to, the following: the design of the diesel emission control strategy, original test data, other relevant test data, the duty cycle of the prospective emission control group, and field experience. For the time period it is effective, a conditional extension is equivalent to a verification for the purposes of satisfying the in-use compliance requirements. Diesel emission control strategies that are conditionally verified for off-road and stationary applications are not eligible for conditional extensions (See Section 2704(k)).

~~(i)~~(j) Design Modifications. If an applicant modifies a diesel emission control strategy in any way during the review process, the Executive Officer will terminate the application. The applicant must re-submit an application per Section 2702 (e) – (f) that includes details of the new design in order for the diesel emission control strategy to be considered for verification, a conditional verification, or a conditional extension. Re-submission must follow the requirements of Section 2702(g). If an applicant modifies the design of a diesel emission control strategy that has already been verified or is under consideration for verification by the Executive Officer, the modified version must be evaluated under this Procedure, unless the modifications are part of an approved recall plan. The applicant must provide a detailed description of the design modification along with an explanation of how the modification will change the operation and performance of the diesel emission control strategy. To support its claims, the applicant must submit additional test data, engineering justification and analysis, or any other information deemed necessary by the Executive Officer to address the differences between the

modified and original designs. Processing time periods follow sections (e) and (f) above. A design modification is any change to the diesel emission control strategy as originally specified in the preliminary application or final application submitted per Section 2702(e) - (f) and any difference from the diesel emission control strategy submitted with the preliminary application as required in Section 2702(b). A design modification includes, but is not limited to:

- Any change of materials or specifications to the major parts of the diesel emission control strategy (e.g., the diesel particulate filter, the diesel oxidation catalyst, the canning components, etc.).
- Any change to the wash coat or catalyst formulas or composition.
- Any change to the catalyst loadings.
- Any change to the sensors.
- Any change to the monitoring and notification system control logic or algorithms or parts.

~~(j)~~(k) Verification Transfers. If an applicant wishes to sell, lease, or supply another manufacturer's previously verified diesel emission control strategy, the applicant must do the following:

- (1) Submit a letter of consent from the manufacturer that legally holds the original verification. The letter must give the applicant the right to hold a verification for the diesel emission control strategy and, if applicable, to use information that was previously submitted as support in the application for the original verification.
- (2) Submit an application(s) per Section 2702 of this Procedure. If previously submitted information is included, necessary additional information must be submitted that satisfies all applicable requirements of this Procedure (e.g. testing data, warranty statement, label, owner's manual, etc.).
- (3) Submit a description of the diesel emission control strategy's principals of operation. The applicant must demonstrate understanding of how the product relies on sound principles of science and engineering to achieve emissions reductions.
- (4) Submit a plan showing how the applicant will comply with the in-use compliance requirements of Section 2709 of this Procedure.

~~(k)~~(l) Emission Control Strategies Approved under Other Verification Programs.

Any applicant with a diesel emission control strategy that is verified under another diesel emission control verification program that wishes to receive ARB verification must submit an application that contains the information requested in part (d) above. Pre-existing data and information submitted in support of verification approval from other programs may be submitted, but the applicant must meet requirements that are unique to this Procedure including, but not limited to, a system label compliant with Section 2706(j), a California owner's manual compliant with Section 2706(l), a warranty compliant with Section 2707, in-use compliance requirements per Section 2709, and multimedia evaluation if applicable. The Executive Officer may

evaluate all information submitted including additional information required by this Procedure to determine if a diesel emission control strategy merits ARB verification.

~~(h)~~(m) Treatment of Confidential Information. Information submitted to the Executive Officer by an applicant may be claimed as confidential, and such information shall be handled in accordance with the procedures specified in Title 17, California Code of Regulations, Sections 91000-91022. The Executive Officer may consider such confidential information in reaching a decision on a verification application.

~~(m)~~(n) Recordkeeping Requirements. Both applicants and diesel emission control strategy installers are responsible for keeping records as described below.

(1) Applicants that receive a verification, conditional verification, or a conditional extension must keep records that have valid end user contact information (name, address, phone number), a description of the vehicles or equipment the units are applied to (type of vehicle/equipment, make, model year, vehicle identification number), and a description of the engines the units are applied to (make, model, model year, engine serial number, engine family name). The applicant must keep these records for each diesel emission control strategy family until the in-use compliance requirements of the diesel emission control strategy family are completed. Applicants that receive a conditional extension of conditional verification must submit these records to the Executive Officer one year after receiving the conditional extension or conditional verification. Applicants that receive verifications must submit these records upon request by the Executive Officer to an agent or employee of ARB. The Executive Officer may request that such records be made available at any time. The applicant must provide these records within 30 days of the request by ARB. Failure to submit these records may result in revocation or suspension of the verification and/or any other remedy available under Part 5, Division 26 of the Health and Safety Code.

(2) Installers must keep all pre-installation compatibility assessment records as described in Section 2706(t)(3).

~~(n)~~(o) The Executive Officer may at any time with respect to any diesel emission control strategy sold, leased, offered for sale, intended for sale, or manufactured for sale in California, order the applicant or manufacturer to submit records pertaining to the diesel emission control strategy, at the applicant's expense, to a location specified by the Executive Officer.

~~(o)~~(p) Applicants that receive a verification, a conditional verification, or a conditional extension must demonstrate sales or the active pursuit of sales of their diesel emission control strategies in California upon request of the

Executive Officer. If an applicant fails to provide such proof, the Executive Officer will evaluate whether the verification should be revoked.

- ~~(p)~~(q) The Executive Officer may, with respect to any diesel emission control strategy sold, leased, offered for sale, intended for sale, or manufactured for sale in California, order the applicant or strategy manufacturer to make available for testing and/or inspection a reasonable number of diesel emission control ~~system strategies~~ including but not limited to new diesel emission control strategies selected by ARB staff that are in the possession of authorized dealers or distributors but not yet installed on candidate engines, and may direct that they be delivered at the applicant's expense to the state board at the Haagen-Smit Laboratory, 9528 Telstar Avenue, El Monte, California or where specified by the Executive Officer. The Executive Officer may also, with respect to any diesel emission control strategy being sold, leased, offered for sale, intended for sale, or manufactured for sale in California, have an applicant test and/or inspect under the supervision of the Executive Officer a reasonable number of units at the applicant's or manufacturer's facility or at any test laboratory accepted by the Executive Officer. All such testing and inspection is confirmatory in nature. If the Executive Officer finds performance that is not consistent with either an existing or requested verification, the applicant must address and resolve the inconsistency to the satisfaction of the Executive Officer in order to maintain or receive verification. Any testing and inspection done by ARB cannot be used as a substitute for emissions test data or other support required in an application for verification.
- (r) For the purpose of selecting new diesel emission control strategies for testing and/or inspection to determine compliance with this regulation, an agent or employee of ARB, with prior notice and upon presentation of proper credentials, has the right to enter any facility (with any necessary safety clearances) where diesel emission control strategies verified under these Procedures are located or kept.
- ~~(q)~~(s) The Executive Officer may lower the verification level or revoke the verification status of a verified diesel emission control strategy family, a conditionally verified strategy, or a strategy with a conditional extension or suspend all review of pending verification applications if the Executive Officer determines that there are errors, omissions, inaccurate information, fraudulent submittals, or a deficiency of required submittals, in the application for verification, supporting information, warranty report, recall plan, or in-use compliance ~~testing report.~~ Any changes to the verified diesel emission control strategy family not approved by the ARB will subject the manufacturer to ARB enforcement actions. Additionally, penalties may be assessed under Part 5, Division 26 of the Health and Safety Code. The Executive officer may suspend the review of all other applications sent by an applicant if that applicant fails to submit warranty reports or any other requested information.

The Executive Officer may also seek remedial action against the applicant if it is determined that the verified diesel emission control strategy does not comply with the requirements or provisions of the Executive Order.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43012, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2703. Emission Testing Requirements

- (a) Testing on an Emission Control Group Basis. The applicant must test the diesel emission control strategy on an emission control group basis and identify the emission control group. The applicant must identify the test engines and vehicles, if applicable, by providing the engine family name, make, model, model year, and PM and NOx certification levels if applicable. The applicant must also describe the applications for which the diesel emission control strategy is intended to be used by giving examples of in-use vehicles or equipment, characterizing typical duty cycles, indicating any fuel requirements, and/or providing other application-related information.

* * * * *

- (l) Statement of Compliance. The applicant must submit a signed statement that all testing was completed in accordance with the requirements of the Procedure, the test plan approval letter, and any applicable regulations incorporated therein. The statement must also affirm that all required data has been submitted and the applicable quality assurance and quality control has been verified to comply with the requirements of the Procedure, the test plan approval letter, and any applicable regulations incorporated herein. Submission of a statement of compliance does not guarantee that the test data and information will be approved and result in a verification, conditional verification, or conditional extension.

- ~~(l)~~(m) Quality Control of Test Data. The applicant must provide information on the test facility, test procedure, and equipment used in the emission testing. For data gathered using on-road and off-road test cycles and methods, applicants must provide evidence establishing that the test equipment used meets the specifications and calibrations given in the applicable test procedures. The testing information must be approved by the Executive Officer.

- ~~(m)~~(n) The Executive Officer may, with respect to any diesel emission control strategy sold, leased, offered for sale, or manufactured for sale in California, order the applicant or strategy manufacturer to make available for testing

and/or inspection a reasonable number of diesel emission control strategies, and may direct that they be delivered at the applicant's expense to the state board at the Haagen-Smit Laboratory, 9528 Telstar Avenue, El Monte, California or where specified by the Executive Officer. The Executive Officer may also, with respect to any diesel emission control strategy being sold, leased, offered for sale, or manufactured for sale in California, have an applicant test and/or inspect a reasonable number of units at the applicant or manufacturer's facility or at any test laboratory under the supervision of the Executive Officer.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2704. Durability Testing Requirements

(a) The applicant must demonstrate, to the satisfaction of the Executive Officer, the durability of the applicant's diesel emission control strategy through an actual field or laboratory-based demonstration combined with chassis or engine dynamometer-based emission tests. If the applicant chooses a laboratory-based durability demonstration, an additional field demonstration will be required to demonstrate in-field compatibility (pursuant to Section 2705). If the applicant has demonstrated the durability of the identical strategy in a prior verification or has demonstrated durability through field experience, the applicant may request that the Executive Officer accept the previous demonstration in fulfillment of this requirement. In evaluating such a request, the Executive Officer may consider all relevant information including, but not limited to, the similarity of baseline emissions and application duty cycles, the relationship between the emission control group used in previous testing and the current emission control group, the number of engines tested, evidence of successful operation and user acceptance, and published reports.

(b) Demonstrating Durability on an Emission Control Group Basis [reserved]

~~(b)~~(c) Engine Selection. Subject to the approval of the Executive Officer, the applicant may choose the engine and application to be used in the durability demonstration. The engine and application must be representative of the emission control group for which verification is sought. The selected engine need not be the same as the engine used for emissions testing, but if the applicant does use the same engine, the emission testing may also be used for the initial durability tests. Emissions of NO₂ from the emissions test engine must not exceed 15 percent of the total baseline NO_x emissions by mass. If there is a special category of engines with NO₂ emission levels that

normally exceed 15 percent, this requirement may be adjusted for those engines at the discretion of the Executive Officer.

~~(e)~~(d) Test Fuel.

- (1) The test fuel must meet the specifications in the California Code of Regulations (Sections 2280 through 2283 of Title 13), with the exception of the sulfur content or other properties previously identified by the applicant and approved by the Executive Officer. The Executive Officer may approve test fuel(s) that do not comply with Sections 2280 through 2283 of Title 13 of the California Code of Regulations if the fuel(s) are determined to be, based on sound science and engineering, representative of commercially available fuel typically used for the intended application(s).
- (2) If operation or performance of a diesel emission control strategy is affected by fuel sulfur content, the sulfur content of the test fuel must be no less than 66 percent of the stated maximum sulfur content for the diesel emission control strategy, unless
 - (A) the testing is performed with fuel containing 15 ppmw or less sulfur for verification on 15 ppmw or less sulfur diesel fuel, or
 - (B) the testing is performed with diesel fuel commercially available in California for verification on CARB diesel fuel (i.e., fuel meeting the specifications in Title 13, California Code of Regulations, Sections 2280 through 2283).
- (3) Baseline testing may be conducted with commercially available diesel fuel or diesel fuel with 15 ppmw or less sulfur. Baseline and control tests must be performed using the same fuel unless the control fuel is specified as a component of the emission control strategy.
- (4) The test fuel (or batch of fuel purchased) must be analyzed using American Society for Testing and Materials (ASTM) test methods listed in Table 6 (See Section 2710), which are incorporated herein by reference. At a minimum, sulfur content, aromatic content, polycyclic aromatic hydrocarbons, nitrogen content, and cetane number must be reported. The Executive Officer may ask for additional properties to be reported if evidence suggests those properties may affect functioning of the diesel emission control strategy.

~~(d)~~(e) Service Accumulation. The durability demonstration consists of an extended service accumulation period in which the diesel emission control strategy is implemented in the field or in a laboratory accepted by the Executive Officer, with emission reduction testing before and after the service accumulation. Service accumulation begins after the first emission test and concludes before the final emission test. The pre-conditioning period required in Section 2703 (c) cannot be used to meet the service accumulation requirements.

- (1) Minimum Durability Demonstration Periods. The minimum durability demonstration periods are shown in Table 3, below.

Table 3. Minimum Durability Demonstration Periods

Engine Type	Minimum Durability Demonstration Period
On-Road	50,000 miles or 1000 hours
Off-Road (including portable engines) Stationary, Marine, Locomotives, TRUs, and APUs	1000 hours
Stationary Emergency Standby Engines	500 hours
<u>Locomotives</u>	<u>3000 engine hours</u>

(2) Temperature and Backpressure Measurement Requirements. For strategies that include exhaust aftertreatment, engine backpressure, exhaust temperature, and engine speed must be measured and recorded for 1000 hours or over the entire durability period (whichever is shorter). The applicant must propose a measurement and recording protocol for approval by the Executive Officer. The protocol may include, but is not limited to, measurement and recording of values once every few seconds, or higher frequency measurement with recording of averages, minima, and maxima over longer time intervals. The data must include an accurate date and time stamp that corresponds with periods of actual engine operation. Data must be submitted electronically in columns as a spreadsheet or text file or another format approved by the Executive Officer. Failure to submit in an approved format will terminate the application process.

* * * * *

(e)(f) Third-Party Statement for In-field Durability Demonstrations. For in-field durability demonstrations, the applicant must provide a written statement from an Executive Officer approved third party, such as the owner or operator of the vehicle or equipment used, at the end of the durability period. The statement must describe overall performance, maintenance required, problems encountered, and any other relevant comments. The results of a visual inspection conducted by the third party at the end of the demonstration period must also be described. The description should comment on whether the diesel emission control strategy is physically intact, securely mounted, leaking fluids, and should include any other evaluative observations. The third party statement must clearly identify the demonstration engine and vehicle or equipment using a unique identifier such as a vehicle identification number and engine serial number along with the engine family name, and must provide the name and contact information of the third party.

~~(f)~~(g) Test Cycle. Testing requirements are summarized in Table 4. Note that the same cycle(s) must be used for both the initial and final tests.

* * * * *

~~(g)~~(h) Test Run. The requirements for emissions reduction testing are summarized in Table 4, below. Note that special pre-conditioning requirements may apply. See section 2706(a)(4) for details.

* * * * *

~~(h)~~(i) Maintenance During Durability Demonstration. Except for emergency engine repair, only scheduled maintenance on the engine and diesel emission control strategy and re-fill of additives (if any) may be performed during the durability demonstration. If normal maintenance includes replacement of any component of the diesel emission control strategy, the time (miles, years, or hours) between component change or refill must be reported with the results of the demonstration.

~~(i)~~(j) Functional Testing of Monitoring and Notification Systems. The applicant must demonstrate the durability of all monitoring and notification systems employed by the diesel emission control strategy. Such systems include, but are not limited to, backpressure monitors, reductant level monitors, malfunction indicator systems, and mechanisms to de-rate an engine's maximum power output. The applicant must propose test procedures to demonstrate the durability of the monitoring and notification systems on a diesel emission control strategy that has completed the service accumulation period.

~~(j)~~(k) Performance Requirements. The diesel emission control strategy must meet the following requirements throughout the durability demonstration period:

- (1) If the applicant claims a percent emission reduction, the percent emission reduction must meet or exceed the initial verified percent emission reduction level.
- (2) If the applicant claims to achieve 0.01 g/bhp-hr for PM, the PM emission level must not exceed 0.01 g/bhp-hr.
- (3) The diesel emission control strategy must maintain its physical integrity. Its physical structure and all of its components not specified for regular replacement during the durability demonstration period must remain intact and fully functional.
- (4) The diesel emission control strategy must not cause any damage to the engine, vehicle, or equipment.

- (5) The backpressure caused by the diesel emission control strategy should not exceed the engine manufacturer's specified limits, or must not result in any damage to the engine.
- (6) No maintenance of the diesel emission control strategy beyond that specified in its owner's manual will be allowed without prior Executive Officer approval.

~~(k)~~(l) Conditional Verification for Off-road and Stationary Applications. If the Executive Officer determines that the diesel emission control strategy is technologically sound and appropriate for the intended application, he may grant a conditional verification for off-road and stationary applications upon completion of 33 percent of the minimum durability period. In making this determination, the Executive Officer may consider all relevant information including, but not limited to, the following: the design of the diesel emission control strategy, filter and catalyst substrates used, similarity of the strategy under consideration to verified strategies, the intended application of the diesel emission control strategy, other relevant testing data, and field experience. Where conditional verification is granted, full verification must be obtained by completing the durability testing and all other remaining requirements. For stationary, marine, RTG crane, and TRU applications, these requirements must be completed within a year after receiving conditional verification. For off-road applications, the requirements must be completed within two years after receiving conditional verification. For the aforementioned time periods, conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations except as otherwise provided in Section 2709. For all applications, failure to complete the requirements within the specified time may result in revocation of the conditional verification and the recall provisions of Section 2709 of this Procedure.

~~(j)~~(m) Failure During the Durability Demonstration Period. If the diesel emission control strategy fails to maintain its initial verified percent emission reduction or emission level for any reason, the Executive Officer may downgrade the strategy to the verification level which corresponds to the lowest degraded performance observed in the durability demonstration period. If the diesel emission control strategy fails to maintain at least 25 percent PM reduction or 25 percent NOx reduction at any time during the durability period, the diesel emission control strategy will not be verified. If the diesel emission control strategy fails, requires repair or maintenance, suffers any type of component failure, or the demonstration is aborted at any point in the course of the durability demonstration period, the applicant must submit a report explaining the circumstances within 45 days of the occurrence. The Executive Officer may then determine whether to deny verification or allow the applicant to correct the failed diesel emission control strategy and either continue the durability demonstration or begin a new durability demonstration.

(n) The applicant must submit a signed statement that all testing was completed in accordance with the requirements of the Procedure, the test plan approval letter, and any applicable regulations incorporated therein. The statement must also affirm that all required data has been submitted and the applicable quality assurance and quality control has been verified to comply with the requirements of the Procedure, the test plan approval letter, and any applicable regulations incorporated therein. Submission of a statement of compliance does not guarantee that the test data and information will be approved and result in a verification, conditional verification, or conditional extension.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2705. Field Demonstration Requirements

* * * * *

(c) Reporting Requirements.

(1) Temperature and Backpressure Measurement Requirements. For strategies that include exhaust aftertreatment, engine backpressure, exhaust temperature, and engine speed must be measured and recorded over the entire demonstration period. The applicant must propose a measurement and recording protocol for approval by the Executive Officer. The protocol may include, but is not limited to, measurement and recording of values once every few seconds, or higher frequency measurement with recording of averages, minima, and maxima over longer time intervals. The data must include an accurate date and time stamp that corresponds with periods of actual engine operation. Data must be submitted electronically in columns as a spreadsheet or text file or another format approved by the Executive Officer. Failure to submit in an approved format will terminate the application process.

* * * * *

(5) The applicant must submit a signed statement that all testing was completed in accordance with the requirements of the Procedure, the test plan approval letter, and any applicable regulations incorporated therein. The statement must also affirm that all required data has been submitted and the applicable quality assurance and quality control has been verified to comply with the requirements of the Procedure, the test plan approval letter, and any applicable regulations incorporated therein. Submission of a statement of compliance does not guarantee that the test data and

information will be approved and result in a verification, conditional verification, or conditional extension.

* * * * *

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2706. Other Requirements.

* * * * *

(c) Fuel Additives. Diesel emission control strategies that use fuel additives must comply with Section 2710 and meet the following additional requirements for verification. Fuel additives must be used in combination with a level 3 diesel particulate filter unless they can be proven to the satisfaction of the Executive Officer to be safe for use alone. In addition, the applicant must meet the following requirements:

(1) The applicant must submit the exact chemical formulation of the fuel additive,

* * * * *

(5) Fuel additives must be in compliance with applicable federal, state, and local government requirements. This requirement includes, but is not limited to, registration of fuel additives with the U.S. EPA. Registration of fuel additives with U.S. EPA must be completed prior to submission of an applicant's preliminary verification application.

* * * * *

(d) Alternative Diesel Fuels. Alternative diesel fuels must be in compliance with applicable federal, state, and local government requirements. This requirement includes, but is not limited to, registration of the alternative diesel fuel with the U.S. EPA. Registration of alternative diesel fuels with U.S EPA must be completed prior to submission of an applicant's preliminary verification application. The applicant must conduct additional emission tests of alternative diesel fuels if the Executive Officer determines that such tests are necessary. The Executive Officer may consider all factors including, but not limited to, fuel components that could adversely affect emissions reductions and/or the applications to which they are applied.

* * * * *

- (f) Operational Data Monitoring and Storage Requirements. The following requirements apply to all diesel emission control strategies that include exhaust aftertreatment:
- (1) During emissions and durability testing, the applicant must:
 - (A) Measure and record exhaust backpressure and temperature pursuant to sections 2703 and 2704.
 - (B) Demonstrate that the backpressure caused by its diesel emission control strategy is within the engine manufacturer's specified limits, or will not result in any damage to the engine.
 - (2) If operation of the engine with the diesel emission control strategy installed will result in a gradual build-up of backpressure exceeding the engine's specified limits over time (such as due to the accumulation of ash in a filter), the applicant must submit information describing how to reduce the backpressure.
 - (3) All filter-based diesel emission control strategies must be installed with a backpressure monitor to notify the operator when the high backpressure limit, as specified by the engine manufacturer or as defined herein ~~included in the verification application~~, is approached. The notification must occur and be clearly visible to the operator while the vehicle or equipment is in use. The applicant must identify the high backpressure limits of the strategy in its application for verification.
 - (4) High backpressure notifications must meet the following requirements:
 - (A) If the applicant does not set the high backpressure notifications according to the engine manufacturer's specifications, the applicant must use notification thresholds which do not exceed the following:
 1. The first high backpressure notification must occur when the backpressure exceeds 60 inches of water for 10 consecutive seconds.
 2. The second high backpressure notification must occur when the backpressure exceeds 80 inches of water for 10 consecutive seconds.
 - (B) The applicant's system must include a final, non-resettable high backpressure notification that must occur if the backpressure exceeds 100 inches of water for 10 consecutive seconds.
 1. If the notification is triggered, it must remain on until a qualified technician can examine the engine and filter to determine the cause of the high backpressure condition.
 2. If the notification is triggered and the engine is subsequently turned off, it must immediately resume when the engine is turned back on.
 3. If the notification is triggered and the notification system subsequently either loses power or otherwise becomes nonfunctional, the notification must immediately resume when the system becomes operational.

(C) Each high backpressure notification event must be recorded pursuant to Section 2706(f)(6).

~~(4)~~(5) The Executive Officer reserves the right to require monitors that identify low backpressure limits in those cases where failures leading to low backpressure are unlikely to be detected, or have the potential to cause environmental damage beyond that caused by the engine prior to being equipped with the emission control strategy (e.g., systems that introduce additives into the fuel).

~~(5)~~(6) ~~If the Executive Order for a diesel emission control strategy includes an exhaust temperature requirement, the strategy~~ All filter-based diesel emission control strategies must include an electronic device that is able to do the following:

- (A) Measure and record exhaust backpressure and exhaust gas temperature data. Each record must include the date and time of measurement.
- (B) Have the capacity to record exhaust backpressure and exhaust temperature data for a period of at least 200 hours of actual engine operation without overwriting any stored data. Data must be recorded at least once every 30 seconds.
- (C) Have the capacity to record error codes and high backpressure codes for a period of at least 500 hours of actual engine operation without overwriting any stored data.

* * * * *

(t) Pre-Installation Compatibility Assessment. The applicant, distributor, or installer (i.e., the party conducting the pre-installation compatibility assessment) must be able to demonstrate, to the satisfaction of the Executive Officer, that a candidate engine being considered for retrofit is compatible with the verified diesel emission control strategy.

(1) For diesel emission control strategies that have exhaust gas temperature requirements for successful operation, the applicant, distributor, or installer (i.e., the party conducting the pre-installation compatibility assessment) must measure and record the exhaust gas temperature for each candidate engine to determine if the temperature requirements are satisfied. Notwithstanding, the applicant is responsible for ensuring that the candidate engine is properly assessed. In lieu of logging data for each candidate engine, the applicant may choose to data-log a representative number of candidate engines, provided the following requirements are met:

- (A) The diesel emission control strategy is verified to reduce emissions of diesel particulate matter only,
- (B) At least 5 representative engines must be data-logged from within each group of similar engines, or 10 percent of each group, whichever is larger. All engines in a group of 5 or fewer engines must be data-logged. Data from engines outside the group cannot be used to support retrofit of engines within the group. A group of engines is similar if:

1. All engines belong to the same common ownership fleet.
 2. All engines have the same make and model.
 3. All engines are certified to the same PM emissions standard.
 4. The maximum power ratings of all engines fall within a range that does not exceed 100 horsepower. For example, all engines are rated to between 250 and 350 horsepower.
 5. None of the engines have exhaust gas recirculation, or all of the engines have external exhaust gas recirculation, or all of the engines have internal exhaust gas recirculation.
 6. All engines are installed in similar vehicles or equipment that perform a like function and have similar duty cycles. Examples of vehicle or equipment groups considered similar include solid waste collection vehicles, transit buses, class 8 tractors, excavators, wheel loaders, and back-up emergency generators.
- (C) If the diesel emission control strategy is determined to be compatible with the candidate engine in its current application, the applicant, distributor, or installer (i.e., the party conducting the pre-installation compatibility assessment) must provide a written statement to the end user no later than the date at the time of installation and, upon request, to the Executive Officer within 30 calendar days of the request, that includes:
1. A statement that the exhaust gas temperature profile of the candidate engine was found to satisfy the requirements of the diesel emission control strategy's Executive Order,
 2. The date of this determination,
 3. The name and contact information of the owner of the common ownership fleet,
 4. The Executive Order number and the diesel emission control strategy family name,
 5. The engine family name, engine make and model, and power rating of each candidate engine along with a unique identifier such as a vehicle identification number or an engine serial number,
 6. A description of the vehicle or equipment type for each candidate engine,
 7. Identification of which candidate engines were data-logged and the groups they represent,
 8. Identification of the parameters used to define each group of similar engines, and
 9. The name of the installer and the date of installation, ~~if applicable.~~
- (D) In cases where representative sampling is selected, the party conducting the pre-installation compatibility assessment is still responsible for ensuring that all diesel emission control strategy installs comply with all the terms and conditions of the Executive Order.

- (2) Data must be measured and recorded using a stand-alone data logging system that is independent of the diesel emission control strategy and must adhere to the following criteria:
- (A) The measured and recorded data must be representative of the actual duty cycle and operation of the candidate engine as best it can be anticipated at the time.
 - (B) The exhaust gas temperature of the candidate engine must be measured at a point in the exhaust system that is within 6 inches of the proposed location of the inlet of the diesel emission control strategy.
 - (C) The recorded exhaust gas temperature must have an accuracy of at least ± 4 degrees Celsius. The temperature sensor must have a range sufficient to accommodate the highest exhaust gas temperature measured plus 10 percent without exceeding the sensor's full scale rating while ensuring that 90 percent of the measured values fall between 10 and 90 percent of the sensor's full scale rating.
 - (D) The exhaust gas temperature of the candidate engine must be measured and recorded for a period that is long enough to determine the exhaust gas temperature profile associated with the candidate engine's duty cycle, but not less than 24 hours of representative, actual engine run time. The data logging strategy must include a means to accurately determine when the engine is actually running. This may include use of a data logging system that starts automatically when the engine starts and stops automatically when the engine stops, or a means to identify and remove data that correspond to the engine being off such as by simultaneously logging data from an engine RPM sensor or applying a temperature threshold that corresponds to a temperature just below the idle temperature of the engine.
 - (E) The memory of the data logging system must be of sufficient size to ensure that data are not overwritten prior to retrieval.
 - (F) All data must be recorded at a frequency of at least once every 5 seconds (0.2 Hertz)
 - (G) At a minimum, the following parameters must be measured and recorded:
 - 1. Exhaust gas temperature in degrees Celsius
 - 2. Time and date for each data point
 - 3. Other parameters deemed necessary by the Executive Officer to meet the terms and conditions of the Executive Order.
- (3) At the Executive Officer's request, the applicant must submit all data used to determine the suitability of a candidate engine with a verified diesel emission control strategy. All logged data must be submitted electronically in Microsoft Excel or Microsoft Access or another format approved by the Executive Officer. The installer must keep a record of the data used to determine the suitability of the candidate engine for the duration of the warranty period of the diesel emission control strategy and make the data

available to the applicant and the Executive Officer upon request. These data must include all logged data, the date of the determination, the name and contact information of the end user, the date of installation, the name and contact information of the installer, the Executive Order number, the diesel emission control strategy family name, and clearly identify the candidate engine and vehicle or equipment using a unique identifier such as a vehicle identification number and an engine serial number along with the engine family name.

- (4) The applicant must establish a smoke opacity limit to facilitate the identification of candidate engines that are compatible with the diesel emission control strategy. A candidate engine with a smoke opacity measured in accordance with Society of Automotive Engineers J1667 test procedures that exceeds the limit established by the applicant must not be retrofit with the diesel emission control strategy.
 - (A) The applicant must select a smoke opacity limit that serves to prevent installation of a diesel emission control strategy on an engine that is in a poor state of maintenance.
 - (B) For a diesel emission control strategy that is already verified, the holder of the verification must establish and implement a smoke opacity limit no later than six months following the effective date of this part of the regulation.
- ~~(4)~~(5) Prior to installation of a diesel emission control strategy, the installer must conduct a basic assessment of each candidate engine's state of maintenance to ensure that it is appropriate for use with the diesel emission control strategy. The assessment must be performed no more than 30 days prior to installation. The installer must maintain a record of all documentation used to make the determination that the candidate engine was appropriate for use with the diesel emission control strategy. All such records maintained by the installer must be made available to the Executive Officer within thirty days upon written request. For this basic assessment, the installer must at a minimum do the following:
 - (A) Review oil consumption and engine maintenance records if available,
 - (B) Obtain a fuel sample from the fuel tank and visually inspect the sample for contamination,
 - (C) Inspect the engine for signs of poor maintenance including oil leaks,
 - (D) Inspect the tailpipe for signs of oil contamination, ~~and~~
 - (E) Inspect the exhaust plume for signs of high PM emissions and oil burning, ~~and~~
 - (F) Perform a smoke opacity test that meets the requirements of the Society of Automotive Engineers J1667 test procedures and record the results.
- (6) For engines that operate at a constant-speed or are otherwise designed such that they are unable to follow SAE J1667, the applicant can propose an alternate criteria instead of a smoke opacity level to determine if an engine is in a proper state of maintenance.

(u) Requirements for Installers of Diesel Emissions Control Strategies

- (1) Any party that installs a diesel emission control strategy must be authorized and trained by the party that holds the verification for the diesel emission control strategy.
- (2) Any party that installs a diesel emission control strategy must comply with the pre-installation assessment requirements in section 2706(t).
- (3) All installations must strictly adhere to the requirements of the party that holds the verification for the diesel emissions control strategy.
- (4) Any party that installs a diesel emission control strategy must offer a warranty pursuant to section 2707(a)(2).

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600, 43700 and 43830.8, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5, Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2707. Warranty Requirements.

* * * * *

- (b)(1) Product Warranty Statement. The applicant must furnish a copy of the following statement in the owner's manual, a copy of which must be provided to each owner upon delivery of the diesel emission control strategy. The applicant may include descriptions of circumstances that may result in a denial of warranty coverage, but these descriptions shall not limit warranty coverage in any way.

YOUR WARRANTY RIGHTS AND OBLIGATIONS

(Applicant's name) must warrant the diesel emission control system in the application for which it is sold or leased to be free from defects in design, materials, workmanship, or operation of the diesel emission control system which cause the diesel emission control system to fail to conform to the emission control performance level it was verified to, or to the requirements in the California Code of Regulations, Title 13, Sections 2700 to 2706, and 2710, for the periods of time listed below, provided there has been no abuse, neglect, or improper maintenance of your diesel emission control system, vehicle or equipment, as specified in the owner's manuals. Where a warrantable condition exists, this warranty also covers the engine from damage caused by the diesel emission control system, subject to the same exclusions for abuse, neglect or improper maintenance of your vehicle or equipment. Please review your owner's manual for other warranty information. Your diesel emission control system may include a core part

(e.g., particulate filter, diesel oxidation catalyst, selective catalytic reduction converter) as well as hoses, connectors, a back pressure monitor (if applicable), and other emission-related assemblies. Where a warrantable condition exists, (applicant's name) will repair or replace your diesel emission control system at no cost to you including diagnosis, parts, and labor.

WARRANTY COVERAGE:

For a (engine size) engine used in a(n) (type of application) application, the warranty period will be (years or hours or mile of operation) whichever occurs first. If any emission-related part of your diesel emission control system is defective in design, materials, workmanship, or operation of the diesel emission control system thus causing the diesel emission control system to fail to conform to the emission control performance level it was verified to, or to the requirements in the California Code of Regulations, Title 13, Sections 2700 to 2706, and 2710, within the warranty period, as defined above, (Applicant's name) will repair or replace the diesel emission control system, including parts and labor. This coverage also applies to any parts replacements, sizing changes, or adjustments that are required to appropriately match the diesel emission control system to the engine on which it is installed.

* * * * *

(c) Diesel Emission Control Strategy Warranty Report. The applicant must submit a warranty report to the Executive Officer annually by April 1 of each calendar year for each verified ~~system strategy~~ with a unique diesel emission control strategy family name. The data compiled must be based on all warranty claims without any prescreening of the data as to the validity of the data. The applicant must also submit a warranty report within 30 calendar days if, at any time, warranty claims for the same part or component of the diesel emission control strategy exceed four percent of the number of diesel engines using the diesel emission control strategy in any given calendar year. Any issue reported to an authorized installer, distributor, service provider or DECS manufacturer within the warranty period must be considered a warranty claim and must be reported in the annual warranty report and, if applicable, the warranty report associated with 4% failure rate. The DECS manufacturer is responsible for collecting all issues reported to an authorized installer, distributor, or service provider prior to submitting the warranty report. Where warranty claims exceed four percent, the Executive Officer may modify, revoke or suspend the existing verification or order a recall per the requirements of Section 2709 of these Procedures. The warranty report must include the following information submitted electronically as a spreadsheet or text file or another format approved by the Executive Officer:

- (1) ~~Annual~~ The manufacturers corporate name, sales for the given calendar year and cumulative sales, and annual leases for the given calendar year

- and cumulative leases of diesel emission control ~~systems~~ strategies (California only).
- (2) ~~Annual~~ Production for the given calendar year and cumulative production of diesel emission control ~~systems~~ strategies (California only).
 - (3) Annual summary of warranty claims for the given calendar year (California only). The summary must include:
 - (A) A description of the nature of the claims and of the warranty replacements or repairs. The applicant must categorize warranty claims for each diesel emission control strategy family name by the part(s) or component(s) replaced or repaired.
 - (B) The number and percentage of diesel of diesel emission control ~~systems~~ strategies of each model for which a warranty replacement or repair was identified.
 - (C) A short description of the diesel emission control ~~system~~ strategy part or component that was replaced or repaired under warranty and the most likely reason for its failure.
 - (4) Date the warranty claims were filed and the engine family and application the diesel emission control ~~systems~~ strategy were used with.
 - (5) Delineate the reason(s) for any instances in which warranty service is not provided to end-users that file warranty claims.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600, 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5, Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2709 In-Use Compliance Requirements

- (a) Applicability. These in-use compliance requirements apply to all diesel emission control strategies for on-road, off-road, ~~and stationary,~~ marine, RTG crane, APU, and TRU applications. It is the responsibility of the applicant to perform in-use compliance testing for each verified diesel emission control strategy family (see Section 2706 (j) (2)). Testing is required when the following number of 50 units within a given diesel emission control strategy family have been sold or leased in the California market:-
 - (1) On-road and TRU, 300 units
 - (2) Off-road, RTG Crane, and APU, 100 units
 - (3) Stationary and marine, 50 units except that units installed on Emergency Standby Engine applications that are permitted under the authority of a California Air District, as defined in Section 39025 of the Health and Safety Code, shall not be considered when determining the number of units sold or leased in the California market.
 - (4) Fuel-based strategies [reserved]
- Applicants must submit an in-use compliance testing proposal for approval by the Executive Officer prior to performing the in-use compliance testing.

Applicants who have an on or off-road diesel emission control strategy verified by the U.S. EPA and can demonstrate to the satisfaction of the Executive Officer that the strategy is identical to the units being offered for sale or lease in the California market sold 50 units or more but have less than 50 units installed may submit in their in-use compliance testing proposal a request for the Executive Officer to delay the in-use compliance deadlines specified in this section until 500 units have been sold nationwide. Identical, for the purposes of this Section, means that the units have the same functionality, catalyst loadings, formulation, control logic algorithms, and use the same hardware and materials including, but not limited to, the aftertreatment components, sensors, backpressure monitor, and driver notification system and components.

(b) Test Interval Phases. In-use compliance testing, as described below in subsections (d), (e), (f), and (g), must be conducted per an approved in-use compliance testing proposal. Applicants must obtain and test diesel emission control strategies once they have been operated for at least 60 percent of their minimum warranty period. at two different phases for each diesel emission control strategy family:

(1) Phase 1. Applicants must obtain and test diesel emission control systems once they have been operated for at least 25 percent of their minimum warranty period or for one year, whichever comes first.

(2) Phase 2. Applicants must obtain and test diesel emission control systems once they have been operated between 60 and 80 percent of their minimum warranty period. For all systems used with heavy-duty vehicles, the 60 to 80 percent window must be applied to the 5-year or 150,000-mile minimum warranty period.

(c) In-Use Compliance Testing Proposal. The applicant must submit to the Executive Officer an Phase 4 in-use compliance testing proposal no later than 90 days after selling or leasing in the California market the number of 50th units listed in Section 2709(a). The applicant must submit a Phase 2 in-use compliance testing proposal to the Executive Officer no later than 3 years after the 50th unit is sold. The following information must be included in both testing proposals shall be submitted in the format specified by the Executive Officer and at a minimum include:

(1) A cover letter signed by the applicant that includes the following information:

(A) Diesel emission control strategy family name.

(B) When appropriate, a statement that the diesel emission control strategy family name is also verified by U.S. EPA and the applicant wishes to perform joint ARB/U.S. EPA in-use compliance testing, and a statement that the U.S. EPA verified strategy is identical in all material respects to the ARB verified strategy being offered for sale or lease in California.

Applicants must provide detailed information showing that the strategies

- have the same functionality, catalyst loadings, formulation, control logic algorithms, and use the same hardware and materials including, but not limited to, the aftertreatment components, sensors, backpressure monitor, and driver notification system and components.
- (C) A statement that the author of the cover letter has the authority to represent the applicant with their in-use compliance testing for this diesel emission control strategy family name.
- (D) A statement that the applicant agrees to adhere to the in-use compliance requirements of this Procedure.
- (E) Anticipated dates of in-use compliance tests and final test report submittal.
- (2)(4) Applicant identification information including:-
- (A) Primary contact responsible for in-use compliance testing information including contact information (e.g. name, mailing address, email address, telephone numbers).
- (B) Brief description of the contact's association to the verification holder.
- (3)(2) Diesel emission control strategy family name.
- (4)(3) Parties to be involved in conducting in-use compliance tests including: contact person for the selected emissions test facility or on-site testing company and identification of person or company responsible for removing test units, when appropriate.
- (5)(4) Emissions test facility or on-site testing company identification and description of capabilities.
- (6)(5) Quality control and quality assurance procedures for the test equipment the test procedures, and test facility.
- (7)(6) List of 10 candidate test units (at least 10 choices per phase) for Executive Officer review with the following information for each: vehicle/equipment information on which the unit is installed (make, model, model/year), location, engine information (family name, make, series, model year, displacement), date of manufacture, date of installation, and cleaning/repair history.
- (A) Vehicle or equipment make, model, and model year upon which the proposed test unit is installed.
- (B) Statement that the applicant has access to and has reviewed each vehicles' or equipments' maintenance records.
- (C) Vehicle or equipment location of operation and description (e.g. route delivery, trash collection, front-end loader, etc.).
- (D) Engine information including engine family name, make, model, series, displacement, model year, and horsepower upon which the proposed test unit is installed.
- (E) Proposed test unit serial number and serial number of each component of the diesel emission control strategy.
- (F) Date of manufacture of the proposed test unit.
- (G) Date of installation of the proposed test unit and name of installer.
- (H) Proposed test unit size information, if applicable.
- (I) Proposed test unit cleaning/repair history.

- (8) A description and explanation of the methodology used to ensure that the proposed test units are representative of the engines or vehicles equipped with the applicant's diesel emission control strategy (e.g. statistical analysis, sales data, etc.).
- (9)(7) Cumulative sales of the diesel emission control strategy family name in each application.
- (10)(8) Current and predicted mileage or hours of use each diesel emission control system-proposed test unit will have accrued by the time it is obtained by the applicant of diesel emission control strategy for in-use compliance testing.
- (11) Information regarding warranty claims for the diesel emission control strategy family and a statement that these claims for the same properly maintained and used part or component of the diesel emission control strategy have not exceeded four percent of the number of diesel engines using the diesel emission control strategy in any given calendar year, if accurate. If not, additional information as required.
- (12)(9) Description of the emissions test vehicles and/or engines (engine family name, make, model, series, model year, displacement, horsepower, verification that the test engine(s) are California exhaust emissions certified, verification that the test engine is listed in the applicants emission control group, identification of any maintenance, repairs, or reflash).
- (13)(10) Testing plan for meeting the requirements of part (g) below including:-
- (A) Identification of the procedures and equipment that will be used by the applicant's emissions test facility or on-site testing company.
 - (B) For strategies that were determined to have a propensity to increase emissions of NO₂ during the initial verification process, identification of the reference test units specified in Section 2706, the preconditioning procedures that will be used, and the determination of backpressure procedures that will be used during emissions testing.
 - (C) For strategies that have a distinct regeneration event, identification of the procedures that will be used to quantify the regeneration emissions.
 - (D) Identification of all test cycles and how many repetitions of each cycle will be performed.
 - (E) Identification of the type of dynamometer testing that will be performed or the use of any load banks or other such devices.
 - (F) Identification of the procedures that will be used to validate the test engine(s).
 - (G) Identification of the specific sequence of events that will be followed during emissions testing.
 - (H) Identification of the test fuel that will be used during emissions testing and any analytical procedures that will be used to validate the test fuel.
- (14) Identification of the additional tests and/or inspections that will be performed by the applicant to demonstrate the continuing functionality and

durability of their diesel emission control strategy, including the criteria that will be used to analyze the results and determine compliance.

Within 45 days of receipt of the completed testing proposal, the Executive Officer shall determine whether the applicant has an appropriate testing proposal to support in-use compliance testing. The in-use testing proposal will not be considered approved until the Executive Officer issues the applicant a test plan approval letter of approval. If the Executive Officer determines that the testing proposal is insufficient or inappropriate, the applicant must, within 30 days, submit a revised testing proposal.

- (d) Selection of Diesel Emission Control ~~Systems-Strategies~~ for Testing. For each diesel emission control strategy family ~~and for both test phases~~, the applicant must propose a representative sample of ten installed diesel emission control ~~systems-strategies~~ for in-use compliance testing based on information provided per Section 2709(c) ~~to be approved for review and approval~~ by the Executive Officer. The selected diesel emission control ~~systems-strategies~~ should come from a representative sample of engines ~~or of vehicles~~ equipped with the control ~~systems-strategies~~. The applicant must provide an explanation of the methodology used to ensure that the proposed test units are representative of the engines or vehicles equipped with the applicant's diesel emission control strategy. This methodology must be based on relevant data (e.g. cumulative sales information, size distribution, operating conditions, etc.) and these data must be provided with a detailed explanation for Executive Officer review and approval. The engines or vehicles equipped with the selected diesel emission control ~~systems strategies~~ ~~must have good maintenance records and~~ may receive a tune-up or normal maintenance prior to the applicant obtaining the diesel emission control ~~systems-strategies~~ for testing. The applicant must obtain information from the end users regarding the diesel emission control ~~systems'-strategies'~~ accumulated mileage or hours of usage, maintenance records (to the extent practicable), operating conditions, cleaning history, and a description of any unscheduled maintenance that may affect the emission results.
- (e) Selection of Test Engines. The Executive Officer must approve the appropriate emissions test engines or vehicles for in-use compliance testing. The applicant must provide ~~candidate-proposed~~ test vehicles/engines for the Executive Officer's review in their in-use compliance testing proposal. If the Executive Officer determines that a diesel emission control ~~system-strategy~~ affects the performance of the engine, the Executive Officer may require the applicant to test the selected diesel emission control ~~system-strategy~~ with the engine on which it is installed (e.g. fuel-based strategies). The applicant may tune-up or rebuild test engines prior to, but not after, baseline testing unless rebuilding the engine is an integral part of the diesel emission control strategy. All testing should be performed with the test engine in a proper state of maintenance. A test engine is determined to be in a proper state of

maintenance if its emissions levels are within 10 percent of its original certification values. Emissions of NO₂ from the test engine must not exceed 15 percent of the total baseline NO_x emissions by mass. If there is a special category of engines with NO₂ emission levels that normally exceed 15 percent, this requirement may be adjusted for those engines at the discretion of the Executive Officer.

- (f) ~~Number of Diesel Emission Control Systems~~ Strategies to be Tested. ~~The number of diesel emission control systems an~~ For each diesel emission control strategy family, applicants must test a minimum of four diesel emission control strategies. in each of the two test phases will be determined as follows: For each diesel emission control strategy that fails to meet the requirements of Section 2709(k), two more diesel emission control strategies from the same family must be obtained and tested.
- (1) ~~A minimum of four diesel emission control systems in each diesel emission control strategy family must be tested. For every system tested that does not reduce emissions by at least 90 percent of the lower bound of its initial verification level (or does not achieve an emission level less than or equal to 0.011 g/bhp-hr of PM) or does not meet the NO₂ requirement in section 2709(k), two more diesel emission control systems from the same family must be obtained and tested. The total number of systems~~ strategies tested shall not exceed ten per diesel emission control strategy family.
 - (2) ~~At the discretion of the Executive Officer, applicants may begin testing more than the minimum four diesel emission control systems~~ strategies. Applicants may concede failure of their in-use compliance requirements for their diesel emission control strategy family an emission control system before testing a total of ten diesel emission control systems strategies.
- (g) ~~In-use Compliance Emissions~~ Testing. ~~Applicants must follow the testing procedures used for emission reduction verification as described in Section 2703 (both baseline and control tests are required). Applicants must also perform tests to demonstrate the continuing functionality and durability of their diesel emission control strategy. Applicants must identify specific test procedures and inspections that will be used to verify that all parts of the diesel emission control strategy are intact and functioning as originally verified (e.g. electronic control units, backpressure monitors, temperature sensors, hoses, brackets, etc.). These test procedures and inspections, including proposed criteria that will be used to analyze the results to determine compliance, must be defined in the applicant's in-use compliance testing proposal and receive Executive Officer approval prior to performing in-use compliance testing. As provided in Section 2709(h), the applicant may request the Executive Officer to review and approve an alternate testing procedure. If a diesel emission control strategy verified by U.S. EPA must perform engine dynamometer testing with the Heavy-duty Transient FTP cycle to fulfill the in-use compliance requirements of that program, but was~~

verified by the Executive Officer with chassis dynamometer testing, the Executive Officer will also accept testing with the Heavy-duty Transient FTP cycle for the in-use compliance requirements of this Procedure.

- (h) Alternative Test Cycles and Methods. The Executive Officer may consider, on a case by case basis, an alternative test plan or method for applicants to satisfy the in-use compliance requirements of this section. The proposed alternative test plan must be as scientifically sound as the testing described in Section 2709(g) of the Procedure and it must produce accurate results that will indicate if the emission control ~~system~~ strategy reduces emissions to the level for which it was verified. Use of an alternative test procedure must be approved by the Executive Officer.
- (i) In-Use Compliance Report. The applicant must submit an in-use compliance report to the Executive Officer after ~~each phase of testing~~. The applicant must submit the ~~phase 4~~ report no later than within 2448 months after selling or leasing in the California market the number of units listed in Section 2709(a) from when the 50th unit is sold. Applicants that are conditionally verified may delay their in-use compliance testing but must submit their in-use compliance report no later than 36 months after selling or leasing in the California market the number or units listed in Section 2709(a). The phase 2 report must be submitted within 4 years from when the 50th unit is sold. The following information must be reported for each of the ~~minimum of four diesel emission control systems~~ strategies tested:
- (1) Parties involved in conducting the in-use compliance tests.
 - (2) Quality control and quality assurance information for the test equipment.
 - (3) Diesel emission control strategy family name, test unit serial number and serial number of each component of the diesel emission control strategy, installation date, and manufacture date.
 - (4) Vehicle or equipment and type of engine (engine family name, make, model year, model, displacement, etc.) the diesel emission control ~~system~~ strategy was applied to.
 - (5) Mileage or hours the diesel emission control system was in use.
 - (6) Results of all emissions testing, documentation of any inspections, and results of all additional tests defined in the applicant's approved in-use compliance testing proposal.
 - (7) Summary of all maintenance, adjustments, modifications, and repairs performed on the diesel emission control ~~system~~ strategy.
- (j) The Executive Officer may request the applicant to perform additional in-use testing if the warranty claims for the same part or component of a diesel emission control strategy exceed four percent of the number of diesel engines using the diesel emission control strategy in any given calendar year, or based on other relevant information. As noted in Section 2707(c), if warranty claims exceed four percent of the number of diesel engines using the diesel emission control strategy in any given calendar year, the applicant must notify

the Executive Officer and submit a warranty report within 30 calendar days of that time.

- (k) Conditions for Passing In-Use Compliance Testing. Each For a diesel emission control strategy to pass in-use compliance testing if:
- (1) For strategies verified to the Level 3 or Level 3 Plus classification, emission test results must indicate that the strategy reduced PM emissions by 85 percent or greater, or that the strategy has an emission level less than or equal to 0.01 g/bhp-hr of PM and, if verified with a Mark classification, that the strategy continues to reduce NOx levels by at least 90 percent of the lower bound of that Mark, or for other verified Levels and Marks, that the strategy reduced emissions by at least 90 percent of the lower bound of the emission reduction level the Executive Officer originally verified it to, and,-
 - (2) If required, the strategy meets the additional test requirements and/or inspections defined in the applicant's approved in-use compliance testing proposal and described in the applicant's in-use test plan approval letter issued by the Executive officer, and
 - (3) If required In addition, the strategy must meets the requirements of section 2706(a) with the exception that the strategy does must not increase emissions of NO₂ by more than an increment equivalent in mass to 33 or 22 percent of the baseline NOx emission level for systems verified under the 30 or 20 percent NO₂ limits, respectively.

If the first four diesel emission control ~~systems strategies~~ tested within a diesel emission control strategy family meet ~~both of~~ these standards, the diesel emission control strategy family passes in-use compliance testing. If any of the first four diesel emission control ~~systems strategies~~ tested within a diesel emission control strategy family fail to meet ~~either of~~ these standards, and more than four units are tested, at least 70 percent of all units tested must meet ~~both these~~ standards for the diesel emission control strategy family to pass in-use compliance testing.

~~For each failed test, for which the cause of the failure can be attributed to the product and not to maintenance or other engine-related problems, two additional units must be tested, up to a total of ten units per diesel emission control strategy family. Within 30 days of a test unit failing, the applicant must submit to the Executive Officer for approval a testing proposal for the additional test units that is compliant with part (c) above. The testing proposal must include an investigative report detailing the causes of the failure, and if necessary, a new testing proposal compliant with Section 2709(c) for approval requesting additional test units.~~ The Executive Officer shall, within 45 days of its receipt, determine whether the test plan is acceptable. After receiving approval from the Executive Officer, the applicant must complete testing.

- (l) Failure of In-Use Compliance Testing. If a diesel emission control strategy family does not meet the minimum in-use compliance requirements of this

section, the applicant must submit a remedial report within 90 days after the in-use compliance report is submitted. The remedial report must include:

- (1) Summary of the in-use compliance report
- (2) Detailed analysis of the failed diesel emission control ~~systems~~ strategies and possible reasons for failure.
- (3) Remedial measures to correct or replace failed diesel emission control ~~systems~~ strategies as well as the rest of the ~~in-use diesel emission control strategies~~ systems in the diesel emission control strategy family.

(m) The Executive Officer shall evaluate the remedial report, annual warranty report, and all other relevant information to determine if the diesel emission control strategy family satisfies the in-use compliance requirements. The Executive Officer may request additional information from the applicant. Based on this review, the Executive Officer may lower the verification level or revoke the verification status of a verified diesel emission control strategy family. The Executive Officer may also lower the verification level or revoke the verification status of a verified diesel emission control strategy family, if the applicant does not conduct in-use compliance testing or fails to adhere to the recall provisions in accordance with this section, or if the Executive Officer conducts in-use compliance testing in accordance with this section (including alternative testing) and the diesel emission control strategy family does not pass the standards in this section.

(n) Recall Provisions. If the Executive Officer determines after a review of an applicant's in-use compliance report, remedial report, warranty report, enforcement testing results, or any other information that a substantial number of units within a diesel emission control strategy family do not: meet the conditions for passing in-use compliance testing as defined in Section 2709(k), or although properly maintained and used, experience a failure of the same component or part creating a warrantable condition, or experience a failure of an operational feature of the strategy, the Executive Officer may require a recall. In the event of a recall the Executive Officer shall provide notification to the applicant that includes a description of the emissions failure, warrantable condition, or operational feature failure, the factual basis for the determination, and shall designate a date at least 60 days from the date of receipt of such notification by which the applicant shall submit a recall plan for review and approval to address the failures or warrantable condition. Recalls must address all diesel emission control strategies sold or leased in the California market within a specific diesel emission control strategy family and may include all diesel emission control strategies sold as California verified. Each recall plan must be approved by the Executive Officer in writing.

(o) Recall Plan. At a minimum, an applicant's recall plan shall contain the following information unless otherwise specified in the notification:

- (1) A description of each diesel emission control strategy subject to the recall including the number of units to be recalled, the emission control group(s) affected, and any information required to identify the recalled units.
 - (2) A description of the type and nature of the failures or warrantable condition and the specific modifications, design changes, alterations, repairs, adjustments, or other changes to be made to correct the failures or warrantable condition with a description of the technical studies, data, or other information which support the applicant's decision regarding specific corrections to be made.
 - (3) A description of the method by which the applicant will determine the names and addresses of the end users and the applicant's methods and schedule for notifying the end users, service facilities, and distributors.
 - (4) A description of the procedure to be followed by the end users to correct the failures or warrantable condition. This shall include the date on or after which the end user can have the failures or warrantable condition remedied, the time necessary to perform the remedy, and the designation of facilities at which the remedy can be performed.
 - (5) The plan may specify the maximum incentives (such as device cleaning or specified quantity of diesel fuel), if any, the applicant will offer to induce vehicle or equipment owners to present their diesel emission control strategies for repair, as evidence that the manufacturer has made a good faith effort to repair or replace all the diesel emission control strategies in the plan. The plan shall include a schedule for implementing actions to be taken including identified increments of progress towards implementation and deadlines for completing each such increment.
 - (6) A copy of the letter of notification to be sent to the end users.
 - (7) A description of the system by which the applicant will assure that an adequate supply of parts will be available to perform any repairs under the recall plan, including the date by which an adequate supply of parts will be available to initiate the repair or replacement campaign, and the method to be used to assure that the supply remains both adequate and responsive to end user demand.
 - (8) A copy of all necessary instructions to be sent to those persons who perform the replacement or repair.
 - (9) A description of the impact the proposed replacement or repairs will have on the vehicle, equipment, or engine including: exhaust backpressure, exhaust temperature, durability, regeneration, maintenance, fuel economy, drivability, performance, safety, warranty, and a summary of the data and technical studies used to support such determinations.
- (p) Reporting Requirements. Unless otherwise specified by the Executive Officer, the manufacturer shall report on the progress of a recall campaign by submitting subsequent reports for six consecutive quarters commencing with the quarter after the recall campaign begins. Such reports shall be submitted no later than 25 days after the close of each calendar quarter to: Chief, Mobile Source Control Division, 9528 Telstar Avenue, El Monte, CA 91731.

(a)(g) The Executive Officer may lower the verification level or revoke the verification status of a verified diesel emission control strategy family if the applicant fails to observe the requirements of Sections 2706, ~~or 2707~~, or 2709. The Executive Officer must allow the applicant an opportunity to address the possible lowering or revocation of the verification level in a remedial report to the Executive Officer and the Executive Officer may make this determination based on all relevant information.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600, and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, and 43204-43205.5, Health and Safety Code; and Title 17 California Code of Regulations Section 93000

§ 2710 Verification of Emission Reductions for Alternative Diesel Fuels and Fuel Additives

* * * * *

Table 6. Fuel Test Methods and Reference Fuel Specifications

Property	General Reference Fuel Specifications	ASTM Test Method
Sulfur Content	15 ppm max	D5453-93
Aromatic Hydrocarbon content, Vol. %	10% max	D5186-96
Polycyclic Aromatic Hydrocarbon Content %	1.4% max	D5186-96
Nitrogen Content	10 ppm max	D4629-96
Natural Cetane Number	48 min	D613-84
Gravity, API	33-39	D287-82 <u>or</u> D4052
Viscosity at 40°, cSt	2.0-4.1	D445-83
Flash point, °F	130	D93-80
Distillation, °F		D86-96
IBP	340-420	
10%REC	400-490	
50%REC	470-560	
90%REC	550-610	
EP	580-660	

* * * * *

(d) Emissions Test Procedures for Particulates, Nitrogen Oxides, Soluble Organic Fraction, Hydrocarbons, and Toxics.

* * * * *

(3) Emission test requirements and test sequence for emissions test program.

(A) The applicant must follow the emission test requirements from Section 2703 subsections (a), (b), (k), (l), and (m). For all on-road diesel vehicles and equipment, the applicant must conduct engine dynamometer testing using the Federal Test Procedure (FTP) Heavy-duty Transient Cycle, in accordance with the provisions in the Code of Federal Regulations, Title 40, Part 86, Subpart N. For all off-road and stationary diesel vehicles and equipment, the applicant must conduct engine dynamometer testing in accordance with Section 2703(e)(2) and 2703(e)(3). The applicant must use the following test sequences:

1. If both cold start and hot start exhaust emission tests are conducted, a minimum of five exhaust emission tests must be performed on the engine with each fuel, using either of the following sequences, where "R" is the reference fuel and "C" is the candidate alternative diesel fuel or fuel additive: RC CR RC CR RC (and continuing in the same order) or RC RC RC RC RC (and continuing in the same order). The engine mapping procedures and a conditioning transient cycle must be conducted with the reference fuel before each cold start procedure using the reference fuel. The reference cycle used for the candidate alternative diesel fuel or fuel additive must be the same as determined for the reference fuel.

2. If only hot start exhaust emission tests are conducted, one of the following test sequences must be used throughout the testing, where "R" is the reference fuel and "C" is the candidate alternative diesel fuel or fuel additive-:

Alternative 1: RC CR RC CR (continuing in the same order for a given calendar day; a minimum of ~~twenty-nine~~ individual exhaust emission tests must be completed with each fuel)

Alternative 2: RR CC RR CC (continuing in the same order for a given calendar day; a minimum of ~~twenty-nine~~ individual exhaust emission tests must be completed with each fuel)

Alternative 3: RRR CCC RRR CCC (continuing in the same order for a given calendar day; a minimum of ~~twenty-nine~~ one individual exhaust emission tests must be completed with each fuel)

For all alternatives, an equal number of tests must be conducted using the reference fuel and the candidate alternative diesel fuel or fuel additive on any given calendar day. At the beginning of each calendar day, the sequence of testing must begin with the fuel that was tested at the end of the preceding day. The engine mapping procedures and a conditioning transient cycle must be conducted at the beginning of each day for the reference fuel. The reference cycle used for the candidate alternative diesel fuel or fuel additive must be the same as determined for the reference fuel. For fuel additives that accumulate within the fuel system, engine, or exhaust system, a test or tests using a multiple of the normal dosage rate will be required in post durability testing to determine any long term effects if accumulation is not shown to stabilize during the required durability time frame.

3. Alternative test sequence. The applicant may request the Executive Officer to approve an alternative test sequence in place of the above test sequences. In reviewing this request, the Executive Officer may consider all relevant information including, but not limited to, the following:
 - a. Statistical and scientific equivalence to 1. or 2., and
 - b. Body of existing test data using the alternative test sequence.

* * * * *

(d) Durability.

- (1) The applicant must meet the durability demonstration requirements in Section 2704 subsections (a), (b), (d), (e), and (h) with the exceptions of emissions testing and fuel requirements. If the applicant's diesel emission control strategy includes hardware components in addition to the alternative diesel fuel or fuel additive, then the emissions testing requirements in Section 2704 apply.
- (2) The applicant must provide test data obtained after completion of the service accumulation, described in Section 2704(d), showing that the candidate alternative diesel fuel or fuel additive does not adversely affect the performance and operation of diesel engines or cause premature wear or cause damage to diesel engines. This must include but is not limited to lubricity, corrosion, and damage to engine parts such as fuel injector tips. The applicant must provide data showing under what temperature and conditions the candidate alternative diesel fuel or fuel additive remains stable and usable in California.
- (3) For additives that accumulate within the fuel system, engine, or exhaust system, the same test engine used for emissions testing must be used for the durability demonstration.

* * * * *

(g) Other Requirements.

- (1) The candidate alternative diesel fuel or fuel additive must be in compliance with applicable federal, state, and local government requirements.
- (2) Applicants planning to market fuel in California must contact and register with the U.S. EPA and the California Dept. of Food and Agriculture. Contacts are listed below.

Office of Transportation and Air Quality
U.S. EPA Head Quarters
Ariel Rios Blvd.
1200 Pennsylvania Ave, N.W.
Washington DC 20468

Petroleum Products/Weighmaster Enforcement Branch
Division of Measurement Standards
Dept. of Food and Agriculture
8500 Fruitridge Road, Sacramento CA 95826
Phone (916) 229-3000

- (3) Additional government agencies such as the California Energy Commission, Area Council of Governments, and Local Air Quality Management Districts may be contacted to facilitate the marketing of alternative diesel fuel in California.
- (4) Labeling
 - (A) For strategies that do not include exhaust aftertreatment, labeling is required on the engine and the storage container for the alternative diesel fuel or fuel additive. This storage container may be either the fuel tank or a separate tank that is used to deliver the additive to the engine.

* * * * *

~~(h) Conditional Verification~~

- ~~(1) The Executive Officer may grant a conditional verification for an alternative diesel fuel or fuel additive for off-road or stationary applications only after the conditional verification for on-road application is granted. The Executive Officer may grant a conditional verification for on-road application if the applicant meets the following conditions:
 - ~~(A) The applicant has applied for U.S. EPA registration of the alternative diesel fuel or fuel additive;~~
 - ~~(B) The U.S. EPA has granted a research and development exemption or otherwise granted permission for the alternative diesel fuel or fuel additive to be used, and;~~
 - ~~(C) All relevant requirements of Sections 2700-2710 have been met with the exception that registration with the U.S. EPA has not been completed.~~
 - ~~(D) Multimedia Assessment as specified in Section 2710 (f).~~~~
- ~~(2) Where conditional verification is granted, full verification must be obtained by completing the U.S. EPA registration process within a year after receiving~~

~~conditional verification. During that year, conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations.~~

* * * * *

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600, 43700 and 43830.8 Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5 and 43830.8, Health and Safety Code; Section 71017, Public Resources Code, and Title 17 California Code of Regulations Section 93000.

DRAFT