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Note: The Air Resources Board (ARB) is providing the following version of the HD OBD enforcement regulation, section 1971.5 of title 13, California Code of Regulations, as approved by OAL on July 25, 2016. This document does not indicate additions or deletions from previous versions of the regulatory text (i.e., no strikeouts or underlines), and **does not constitute an official version of the regulation. The official version of the regulation is *Barclays Official California Code of Regulations* and can be obtained at www.oal.ca.gov.**

FINAL REGULATION ORDER

§ 1971.5. Enforcement of Malfunction and Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines.

(a) *General.*

(1) *Applicability.*

(A) These procedures shall be used to assure compliance with the requirements of California Code of Regulations (Cal. Code Regs.), title 13, section 1971.1 for all 2010 and subsequent model year heavy-duty engines equipped with OBD systems that have been certified for sale in California.

(B) Engines manufactured prior to the 2010 model year are covered by the general enforcement and penalty provisions of the Health and Safety Code, and the specific provisions of Cal. Code Regs., title 13, section 1971 and section 2111 through section 2149.

(2) *Purpose.*

The purpose of this section is to establish the enforcement protocol that shall be used by the Air Resources Board (ARB) to assure that engines certified for sale in California are equipped with OBD systems that properly function and meet the purposes and requirements of Cal. Code Regs., title 13, section 1971.1.

(3) *Definitions.*

The definitions applicable to these rules include those set forth in Health and Safety Code section 39010 et seq. and in Cal. Code Regs., title 13, section 1900(b) and section 1971.1(c), which are incorporated by reference herein. The following definitions are specifically applicable to section 1971.5 and take precedence over any contrary definitions.

“*Days*”, when computing any period of time, unless otherwise noted, means normal working days that a manufacturer is open for business.

“*Engine Class*” means a group or set of engines subject to enforcement testing that have been determined by the Executive Officer to share common or similar hardware, software, OBD monitoring strategy, or emission control strategy.

“*Engine Manufacturer*” means the manufacturer granted certification to sell engines in the State of California.

“*Executive Officer*” means the Executive Officer of ARB or his or her authorized representative.

“*Influenced OBD-Related Recall*” means an inspection, repair, adjustment, or modification program initiated and conducted by a

manufacturer as a result of enforcement testing conducted by the ARB or any other information for the purpose of correcting any nonconforming OBD system for which direct notification of vehicle or engine owners is necessary.

“*Major Monitor*” means those monitors covered by the requirements set forth in Cal. Code Regs., title 13, section 1971.1(e), (f), and (g)(4).

“*Nonconforming OBD System*” means an OBD system on a production engine that has been determined not to comply with the requirements of Cal. Code Regs., title 13, section 1971.1. For purposes of section 1971.5, an engine class shall be considered nonconforming irrespective of whether engines in the engine class, on average, meet applicable emission standards (e.g., evaporative emission standards defined in Cal. Code Regs., title 13, section 1976).

“*OBD Emission Testing*” refers to testing conducted to determine compliance with the malfunction criteria in Cal. Code Regs., title 13, section 1971.1(e) through (g) that are based on a multiple of, or an additive to, a tailpipe emission standard or an absolute measurement from an applicable emission test cycle (e.g., 1.5 times the applicable federal test procedure (FTP) emission standards, PM standard plus 0.02 g/bhp-hr, PM level of 0.03 g/bhp-hr as measured from an applicable emission test cycle).

“*OBD Ratio Testing*” refers to testing conducted to determine compliance with the required in-use monitor performance ratio in Cal. Code Regs., title 13, section 1971.1(d)(3.2.2).

“*Ordered OBD-Related Recall*” means an inspection, repair, adjustment, or modification program required by ARB to be conducted by the manufacturer to correct any nonconforming OBD system for which direct notification of vehicle or engine owners is necessary.

“*Quarterly Reports*” refer to the following calendar periods: January 1 – March 31; April 1 – June 30; July 1 – September 30; October 1 – December 31.

“*Test Sample Group*” means a group of production engines in a designated engine class that are equipped with OBD systems and are selected and tested as part of the enforcement testing program set forth in sections (b) and (c).

“*Voluntary OBD-Related Recall*” means an inspection, repair, adjustment, or modification program voluntarily initiated and conducted by a manufacturer to correct any nonconforming OBD system for which direct notification of vehicle or engine owners is necessary.

(b) *Testing Procedures for ARB-Conducted Testing.*

(1) *Purpose.*

To assure that OBD systems on production engines comply with the requirements of Cal. Code Regs., title 13, section 1971.1, ARB may periodically evaluate engines from an engine class.

- (2) *Preliminary Testing and Evaluation.*
- (A) As part of his or her evaluation of engines to determine compliance with the requirements of Cal. Code Regs., title 13, section 1971.1, the Executive Officer may routinely conduct testing on any production engines that have been certified for sale in California.
 - (B) Based upon such testing or any other information, including data from California or other state heavy duty inspection programs, warranty information reports, and field information reports, the Executive Officer may conduct enforcement testing pursuant to sections (b)(3) through (5) below.
- (3) *Engine Selection for ARB-Conducted Enforcement Testing.*
- (A) *Determining the Engine Class.*
 - (i) Upon deciding to conduct enforcement testing, the Executive Officer shall determine the engine class to be tested. In determining the scope of the engine class to be tested, the Executive Officer shall consider the similarities and differences in the OBD systems of potentially affected engines. Among other things, the Executive Officer shall consider whether engines share similar computer hardware and software, calibrations, or OBD monitoring and emission control strategies.
 - (ii) The default engine class is the engine family or OBD group used by the manufacturer to certify the engines to be tested. However, upon concluding that a subgroup of engines differs from other engines in the identified engine family or OBD group and that a reasonable basis exists to believe that the differences may directly impact the type of testing that will be performed, the Executive Officer may determine that a subgroup of the engine family or OBD group is the appropriate engine class for testing.
 - (iii) Similarly, upon concluding that engines from several engine families or OBD groups (which may include engine families or OBD groups from different model years) share such common characteristics that a reasonable basis exists to believe that results of enforcement testing may be applicable to an engine class larger than a specific engine family or OBD group, the Executive Officer may determine that the appropriate engine class includes more than one engine family or OBD group.
 - (iv) Except for testing to determine if an OBD system has been designed to deactivate based on age and/or mileage (Cal. Code Regs., title 13, section 1971.1(d)(1.3)), the Executive Officer may not conduct testing of an engine class whose engines, on average, exceed the defined full useful life of the engine class. For purposes of the determination of this average, the Executive Officer shall use the accrual rates appropriate for engines in the engine class considering the vehicle weight class, usage type, and other subcategories as defined and used by EMFAC2007, which is incorporated by reference herein.

(B) Size of Test Sample Group.

After determining the engine class to be tested, the Executive Officer shall determine the appropriate number of engines to include in the test sample group for enforcement testing in accordance with the following guidelines:

- (i) For OBD emission testing, the Executive Officer shall follow the provisions of Cal. Code Regs., title 13, section 2137 regarding test sample size. In accordance with section 2137, the Executive Officer shall test 10 engines that have been procured following the protocol of section (b)(3)(C) below and meet the selection criteria of section (b)(3)(D)(i) below to determine the emissions characteristics of the engine class being tested.
- (ii) For OBD ratio testing, the Executive Officer shall collect data from a test sample group of 30 engines that have been procured following the protocol of section (b)(3)(C) below and meet the selection criteria of section (b)(3)(D)(ii) below to determine the in-use OBD monitoring performance of the engine class being tested.
- (iii) In determining compliance with any other requirements of Cal. Code Regs., title 13, section 1971.1 (e.g., diagnostic connector location, communication protocol standards, MIL illumination protocol, evaporative system diagnostics, etc.), the Executive Officer shall determine, on a case by case basis, the number of engines meeting the selection criteria of section (b)(3)(D)(iii) needed to assure that the results of such testing may be reasonably inferred to the engine class. The Executive Officer's determination shall be based upon the nature of the nonconformance and the scope of the engine class. The test sample group could be as few as two test engines.

(C) Protocol for Procuring Engines for Test Sample Group.

- (i) For OBD emission and ratio testing, the Executive Officer shall determine the appropriate manner for procuring engines. In making his or her determination, the Executive Officer shall consider the nature of the nonconformance and the scope of the engine class. The method used shall ensure that engines are recruited from more than one source. Methods used may include obtaining lists of engine owners from specific sources (e.g., engine manufacturers, motor vehicle registration records) and soliciting participation from owners, discussing with fleet or rental operations to locate engines in the engine class, or using methods used by the manufacturer to procure engines for the manufacturer-run heavy duty diesel in-use testing program established pursuant to 70 Federal Register 34594. In selecting engines for OBD emission testing, the Executive Officer shall include only engines meeting the criteria set forth in section (b)(3)(D)(i) below. For OBD ratio testing, the Executive Officer shall include only engines meeting the criteria set forth in section (b)(3)(D)(ii) below.

- (ii) For all other testing, the Executive Officer shall, on a case by case basis, determine the appropriate manner for procuring engines. In making his or her determination, the Executive Officer shall consider the nature of the nonconformance and the scope of the engine class. The Executive Officer may procure engine(s) by any means that assures effective collection and testing of engines (e.g., rental car agencies, fleet vehicles, etc.), but shall not include any vehicle for which a reasonable basis exists that a vehicle operator's driving or maintenance habits would substantially impact test results to determine nonconformance. In all cases, however, the selection process must ensure proper selection of engines in accord with section (b)(3)(D)(iii) below.
- (D) Engines to be included in a Test Sample Group.
- (i) In selecting engines to be included in a test sample group for enforcement OBD emission testing, the Executive Officer shall include only engines that:
 - a. Are certified to the requirements of Cal. Code Regs., title 13, section 1971.1 and California exhaust emission standards.
 - b. Are registered for operation in the United States.
 - c. Have mileage that is less than 75 percent of the certified full useful life mileage and have an age of less than the certified full useful life age for the subject vehicles.
 - d. Have not been tampered with or equipped with add-on or modified parts that would cause the OBD system not to comply with the requirements of Cal. Code Regs., title 13, section 1971.1 or would have a permanent effect on exhaust emission performance
 - e. Have not been subjected to abuse (e.g., racing, overloading, misfueling), neglect, improper maintenance, or other factors that would cause the OBD system not to comply with the requirements of Cal. Code Regs., title 13, section 1971.1 or would have a permanent effect on exhaust emission performance.
 - f. Have no detected or known malfunction(s) unrelated to the monitor or system being evaluated that would affect the performance of the OBD system. At its discretion, ARB may elect to repair an engine with a detected or known malfunction and then include the engine in the test sample group.
 - g. Have had no major repair to the engine resulting from a collision.
 - h. Have no problem that might jeopardize the safety of laboratory personnel.
 - (ii) In selecting engines to be included in a test sample group for enforcement OBD ratio testing, the Executive Officer shall include only engines that:
 - a. Are certified to the requirements of Cal. Code Regs., title 13, section 1971.1.

- b. Have collected sufficient engine operation data for the monitor to be tested. For monitors required to meet the in-use monitor performance ratio and to track and report ratio data pursuant to Cal. Code Regs., title 13, section 1971.1(d)(3.2), sufficient engine operation data shall mean the denominator meets the criteria set forth in sections (b)(3)(D)(ii)1. through 5. below. For monitors required to meet the in-use monitor performance ratio but not required to track and report ratio data pursuant to Cal. Code Regs., title 13, section 1971.1(d)(3.2), sufficient engine operation data shall mean that engines that have a denominator that meets the criteria set forth in sections (b)(3)(D)(ii)1. through 5. below after undergoing testing as set forth in section (b)(4)(C)(ii) below. Specifically, the denominator, as defined in Cal. Code Regs., title 13, section 1971.1(d)(4.3), for the monitor to be tested must have a value equal to or greater than:
 - 1. 150 for gasoline evaporative system and secondary air system monitors, and gasoline monitors utilizing a denominator incremented in accordance with Cal. Code Regs., title 13, section 1971.1(d)(4.3.2)(D), (E), and (F) (e.g., cold start monitors, variable valve timing and/or control system monitors, etc.), or
 - 2. 300 for gasoline catalyst, oxygen sensor, EGR, and all other component monitors.
 - 3. 50 for diesel PM filter monitors, NMHC converting catalyst monitors, PM sensor monitors, and PM sensor heater monitors using a denominator incremented in accordance with Cal. Code Regs., title 13, section 1971.1(d)(4.3.2)(E), (F), (G) or (H), or
 - 4. 150 for diesel monitors utilizing a denominator incremented in accordance with Cal. Code Regs., title 13, section 1971.1(d)(4.3.2)(D), (E), or (F) (e.g., cold start monitors, comprehensive component output component monitors, etc.) and not covered in section (b)(3)(D)(ii)3. above, or
 - 5. 300 for all other diesel monitors not covered under sections (b)(3)(D)(ii)3. and 4. above.
 - c. Have not been tampered with or equipped with add-on or modified parts that would cause the OBD system not to comply with the requirements of Cal. Code Regs., title 13, section 1971.1.
 - d. Have mileage and age that are less than or equal to the certified full useful life mileage and age for the subject engines.
- (iii) In selecting engines to be included in a test sample group for enforcement testing of any other requirement of Cal. Code Regs., title 13, section 1971.1 (not covered by sections (b)(3)(D)(i) or (ii) above), the Executive Officer shall include only engines that:

- a. Are certified to the requirements of Cal. Code Regs., title 13, section 1971.1.
 - b. Have not been tampered with or equipped with add-on or modified parts that would cause the OBD system not to comply with the requirements of Cal. Code Regs., title 13, section 1971.1.
 - c. Have no detected or known malfunction(s) unrelated to the monitor or system being evaluated that would affect the performance of the OBD system. At its discretion, ARB may elect to repair an engine with a detected or known malfunction and then include the engine in the test sample group.
 - d. Have mileage and age that are less than or equal to the certified full useful life mileage and age for the subject engines.
- (iv) If the Executive Officer discovers, by either evidence presented by the manufacturer as provided in section (b)(7) or on his or her own, that an engine fails to meet one or more of the applicable criteria of section (b)(3)(D)(i) through (iii), the Executive Officer shall remove the engine from the test sample group. The Executive Officer may replace any engine removed with an additional engine selected in accordance with sections (b)(3)(C) and (D) above. Test results relying on data from the removed engine shall be recalculated without using the data from the removed engine.
- (4) *Enforcement Testing Procedures.*
- (A) Prior to conducting any testing under section (b)(4), the Executive Officer may replace components monitored by the OBD system with components that are sufficiently deteriorated or simulated to cause malfunctions that exceed the malfunction criteria established pursuant to Cal. Code Regs., title 13, section 1971.1(e) through (g) in a properly operating system. The Executive Officer may not use components deteriorated or simulated to represent failure modes that could not have been foreseen to occur by the manufacturer (e.g., the use of leaded gasoline in an unleaded gasoline engine, etc.). Upon request by the Executive Officer, the manufacturer shall make available all test equipment used by the manufacturer in development, calibration, or demonstration testing (e.g., malfunction simulators, deteriorated “threshold” components, etc.) necessary to duplicate testing done by the manufacturer to determine the malfunction criteria used for major monitors subject to OBD emission testing.
 - (B) OBD Emission Testing. After the test sample group has been selected and procured, the Executive Officer may perform one or more of the following tests:
 - (i) Emission testing with the test procedures used by the Executive Officer for in-use testing of compliance with exhaust emission standards in accordance with Cal. Code Regs., title 13, section 1956.8(b) and (d).

- (ii) On-road or engine or chassis dynamometer testing with the engine being operated in a manner that reasonably ensures that all of the monitoring conditions disclosed in the manufacturer's certification application for the tested monitor are encountered.
- (C) OBD Ratio Testing.
 - (i) For OBD ratio testing of monitors required to meet the in-use monitor performance ratio and track and report ratio data pursuant to Cal. Code Regs., title 13, section 1971.1(d)(3.2), after the test sample group has been selected and procured, the Executive Officer shall download the data from monitors required to track and report such data.
 - (ii) For OBD ratio testing of monitors required to meet the in-use monitor performance ratio but not required to track and report ratio data pursuant to Cal. Code Regs., title 13, section 1971.1(d)(3.2), after the test sample group has been selected and procured, the Executive Officer shall collect data by installing instrumentation or data-logging equipment on the engines/vehicles. After installation of the equipment, the engines/vehicles shall be returned to the engine/vehicle owner/operator to continue to operate the engine/vehicle until the minimum denominator criteria (see section (b)(3)(D)(ii)b.) are satisfied. The Executive Officer shall then calculate the ratio from the data collected in accordance with the requirements of Cal. Code Regs., title 13, section 1971.1(d)(3.2) to allow the Executive Officer to effectively determine the in-use monitor performance ratio.
- (D) Testing for compliance with any other requirement of Cal. Code Regs., title 13, section 1971.1. After the test sample group has been selected and procured, the Executive Officer may perform one or more of the following tests:
 - (i) Emission testing on the applicable FTP or supplemental emission test (SET) cycle or other applicable emission test cycle used for measuring exhaust or evaporative emissions;
 - (ii) On-road or engine or chassis dynamometer testing with the engine being operated in a manner that reasonably ensures that all of the monitoring conditions disclosed in the manufacturer's certification application for the tested monitor are encountered; or
 - (iii) Any other testing determined to be necessary by the Executive Officer. This may include, but is not limited to, the use of special test equipment to verify compliance with standardization requirements.
- (5) *Additional Testing.*
 - (A) Based upon testing of the engine class in section (b)(4) above and after review of all evidence available at the conclusion of such testing, the Executive Officer may elect to conduct further testing of a subgroup of engines from the engine class if the Executive Officer has determined that:

- (i) A subgroup of tested engines differs sufficiently enough from other engines in the tested engine class, and
 - (ii) A reasonable basis exists to believe that the identified differences may indicate that the subgroup may be nonconforming whereas the tested engine class as a whole is not.
- (B) Hereinafter all references to engine class shall be applicable to the subgroup meeting the conditions of section (b)(5)(A) above.
- (C) In any testing of a subgroup of engines under section (b)(5), the Executive Officer shall follow the engine selection and testing procedures set forth in sections (b)(3) and (4) above.
- (6) *Finding of Nonconformance after Enforcement Testing.*
After conducting enforcement testing pursuant to section (b)(4) above, the Executive Officer shall make a finding of nonconformance of the OBD system in the identified engine class under the respective tests for the applicable model year(s) as follows:
- (A) OBD Emission Testing.
- (i) For 2010 through 2012 model year engines:
 - a. Engines certified as an OBD parent rating (i.e., the engine rating subject to the “full OBD” requirement under Cal. Code Regs., title 13, section 1971.1(d)(7.1.1)), shall be considered nonconforming if the emission test results indicate that 50 percent or more of the engines in the test sample group do not properly illuminate the MIL when emissions exceed 2.0 times the malfunction criteria (e.g., 5.0 times the standard if the malfunction criterion is 2.5 times the standard).
 - b. In determining an engine to be nonconforming, the Executive Officer shall use:
 - 1. The test cycle and standard determined and identified by the manufacturer at the time of certification in accordance with Cal. Code Regs., title 13, section 1971.1(d)(6.1) as the most stringent for purposes of determining OBD system nonconformance with the applicable standard in section (b)(6)(A)(i)a. and
 - 2. The adjustment factors determined by the manufacturer at the time of certification in accordance with Cal. Code Regs., title 13, section 1971.1(d)(6.2) for purposes of determining OBD system nonconformance in section (b)(6)(A)(i)a.
 - c. Engines certified as an OBD child rating (i.e., the engine ratings subject to the “extrapolated OBD” requirement under Cal. Code Regs., title 13, section 1971.1(d)(7.1.2)), may not be considered nonconforming based on testing emission levels.
 - (ii) For 2013 through 2015 model year engines:
 - a. All engines classified as OBD parent and child ratings subject to Cal. Code Regs., title 13, section 1971.1(d)(7.2.2) shall be considered to be nonconforming if the emission test results indicate that 50 percent or more of the engines in the test sample

- group do not properly illuminate the MIL when emissions exceed 2.0 times the malfunction criteria (e.g., 4.0 times the standard if the malfunction criterion is 2.0 times the standard).
- b. In determining compliance, the Executive Officer shall use only the test cycle and standard determined and identified by the manufacturer at the time of certification in accordance with Cal. Code Regs., title 13, section 1971.1(d)(6.1) as the most stringent for purposes of determining OBD system nonconformance with the applicable standard in section (b)(6)(A)(ii)a.
 - c. All other engines and engine ratings may not be considered nonconforming based on the emission levels of the tests.
- (iii) For 2016 through 2018 model year engines:
- a. PM filter monitors on engines subject to the malfunction criteria of Cal. Code Regs., title 13, sections 1971.1(e)(8.2.1)(D) and (E) shall be considered to be nonconforming if the emission test results indicate that 50 percent or more of the engines in the test sample group do not properly illuminate the MIL when emissions exceed 2.0 times the malfunction criteria (e.g., PM emission level of 0.06 g/bhp-hr if the malfunction criterion is 0.03 g/bhp-hr) on any of the applicable standards (i.e., FTP or SET).
 - b. Monitors on engines and engine ratings previously certified to Cal. Code Regs., title 13, section 1971.1(d)(7.2.3) for extrapolated OBD in the 2013 through 2015 model years shall be considered nonconforming if the emission test results indicate that 50 percent or more of the engines in the test sample group do not properly illuminate the MIL when emissions exceed 2.0 times the malfunction criteria (e.g., 4.0 times the standard if the malfunction criterion is 2.0 times the standard) on any of the applicable standards (i.e., FTP or SET).
 - c. Monitors on engines not covered under sections (b)(6)(A)(iii)a. and b. above shall be considered nonconforming if the emission test results indicate that 50 percent or more of the engines in the test sample group do not properly illuminate the MIL when emissions exceed the malfunction criteria on any of the applicable standards (i.e., FTP or SET).
- (iv) For 2019 and subsequent model year engines, any engine shall be considered nonconforming if the results of the tests indicate that 50 percent or more of the engines in the test sample do not properly illuminate the MIL when emissions exceed the malfunction criteria on any of the applicable standards (i.e., FTP or SET).
- (v) The Executive Officer may not consider an OBD system nonconforming solely due to a failure or deterioration mode of a monitored component or system that could not have been reasonably foreseen to occur by the manufacturer.
- (B) OBD Ratio Testing.

- (i) 2013 through 2015 model year engines certified to a ratio of 0.100 in accordance with Cal. Code Regs., title 13, section 1971.1(d)(3.2.2) and PM filter filtering performance monitors (section 1971.1(e)(8.2.1)) and missing substrate monitors (section 1971.1(e)(8.2.5)) on 2016 through 2018 model year engines shall be considered nonconforming if the data collected from the engines in the test sample group indicate either that the average in-use monitor performance ratio for one or more of the monitors in the test sample group is less than 0.050 or that 66.0 percent or more of the engines in the test sample group have an in-use monitor performance ratio of less than 0.050 for the same monitor.
 - (ii) Except as provided above in section (b)(6)(B)(i) above, 2016 and subsequent model year engines certified to a ratio of 0.100 in accordance with Cal. Code Regs., title 13, section 1971.1(d)(3.2.2) shall be considered nonconforming if the data collected from the engines in the test sample group indicate either that the average in-use monitor performance ratio for one or more of the monitors in the test sample group is less than 0.088 or that 66.0 percent or more of the engines in the test sample group have an in-use monitor performance ratio of less than 0.100 for the same monitor.
- (C) All Other OBD Testing.
- (i) Engines shall be considered nonconforming if the results of the testing indicate that at least 30 percent of the engines in the test sample group do not comply with the same requirement of Cal. Code Regs., title 13, section 1971.1.
 - (ii) Engines shall be considered nonconforming if the results of the testing indicate that at least 30 percent of the engines in the test sample group do not comply with one or more of the requirements of Cal. Code Regs., title 13, section 1971.1 while the engine is running and while in the key on, engine off position such that off-board equipment designed to access the following parameters via the standards referenced in Cal. Code Regs., title 13, section 1971.1 for 2013 and subsequent model year engines cannot obtain valid and correct data for the following parameters:
 - a. The current readiness status from all on-board computers required to support readiness status in accordance with Society of Automotive Engineers J1979 (SAE J1979) or J1939 (SAE J1939) as incorporated by reference in Cal. Code Regs., title 13, section 1971.1(h)(1) and section 1971.1(h)(4.1);
 - b. The current MIL command status while the MIL is commanded off and while the MIL is commanded on in accordance with SAE J1979/J1939 and Cal. Code Regs., title 13, section 1971.1(h)(4.2), and in accordance with SAE J1979/J1939 and Cal. Code Regs., title 13, section 1971.1(d)(2.1.2) during the MIL functional check and, if applicable Cal. Code Regs., title 13, section 1971.1(h)(4.1.6) during the MIL readiness status check;

- c. The current permanent fault code(s) in accordance with SAE J1979/J1939 and Cal. Code Regs., title 13, section 1971.1(h)(4.4);
 - d. The data stream parameters for: engine speed and OBD requirements to which the engine is certified as required in Cal. Code Regs., title 13, section 1971.1(h)(4.2) and in accordance with SAE J1979/J1939;
 - e. The CAL ID, CVN, ESN, and VIN as required in Cal. Code Regs., title 13, sections 1971.1(h)(4.6), (h)(4.7), and (h)(4.8) and in accordance with SAE J1979/J1939; or
 - f. The proper identification of all data identified in (b)(6)(C)(ii)a. through (b)(6)(C)(ii)e. as supported or unsupported as required in Cal. Code Regs., title 13, section 1971.1(h)(4) and in accordance with SAE J1979/J1939.
- (iii) If the finding of nonconformance under section (b)(6)(C)(i) above concerns engines that do not comply with the requirements of Cal. Code Regs., title 13, section 1971.1(d)(4) or (5) (e.g., numerators or denominators are not properly being incremented), it shall be presumed that the nonconformance would result in an OBD ratio enforcement test result that would be subject to an ordered OBD-related recall in accord with the criterion in section (d)(3)(A)(i). The manufacturer may rebut such a presumption by presenting evidence in accord with section (b)(7)(C)(iii) below that demonstrates to the satisfaction of the Executive Officer that the identified nonconformance would not result in an ordered OBD-related recall under section (d)(3)(A)(i).
- (7) *Executive Officer Notification to the Manufacturer Regarding Determination of Nonconformance.*
- (A) Upon making the determination of nonconformance in section (b)(6) above, the Executive Officer shall notify the manufacturer in writing.
 - (B) The Executive Officer shall include in the notice:
 - (i) a description of each group or set of engines in the engine class covered by the determination;
 - (ii) the factual basis for the determination, including a summary of the test results relied upon for the determination;
 - (iii) a statement that the Executive Officer shall provide to the manufacturer, upon request and consistent with the California Public Records Act, Government Code section 6250 et seq., all records material to the Executive Officer's determination;
 - (iv) a provision allowing the manufacturer no less than 90 days from the date of issuance of the notice to provide the Executive Officer with any information contesting the findings set forth in the notice; and
 - (v) a statement that if a final determination is made that the engine class is equipped with a nonconforming OBD system, the

- manufacturer may be subject to appropriate remedial action, including recall and monetary penalties.
- (C) Within the time period set by the Executive Officer in section (b)(7)(B)(iv) and any extensions of time granted under section (b)(7)(H), the manufacturer shall provide the Executive Officer, consistent with paragraphs (i) through (iii) below, with any test results, data, or other information derived from engine testing that may rebut or mitigate the results of ARB testing, including any evidence that an engine class, if determined to be nonconforming, should be exempted from mandatory recall. (See section (d)(3)(B) below.).
- (i) For OBD emission testing and OBD ratio testing:
- a. The manufacturer may submit evidence to demonstrate that engines in the test sample group used by the Executive Officer were inappropriately selected, procured, or tested in support of a request to have engines excluded from the test sample group in accordance with section (b)(3)(D)(iv).
 - b. If the manufacturer elects to conduct additional testing of engines in the engine class and submit the results of such testing to the Executive Officer, the manufacturer shall:
 1. Present evidence that it has followed the procurement and test procedures set forth in sections (b)(3) and (4) above, or
 2. If the manufacturer elects to use different procurement and testing procedures, submit a detailed description of the procedures used and evidence that such procedures provide an equivalent level of assurance that the results are representative of the engine class.
- (ii) If the manufacturer objects to the size of the test sample group or the method used to procure engines in the test sample group used by the Executive Officer pursuant to section (b)(3)(B)(iii) or (b)(3)(C)(ii), the manufacturer shall set forth what it considers to be the appropriate size and procurement method, the reasons therefore, and test data from engines that confirm the manufacturer's position.
- (iii) If the manufacturer elects to present evidence to overcome the presumption of nonconformance in section (b)(6)(C)(iii) above, the manufacturer shall demonstrate that the engines in the engine class comply with in-use monitor performance ratio requirements of Cal. Code Regs., title 13, section 1971.1(d)(3.2) by presenting:
- a. Evidence in accord with the procurement and testing requirements of sections (b)(3) and (4).
 - b. Any other evidence that provides an equivalent level of proof that engines operated in California comply with the in-use monitor performance ratio requirements.
- (D) The Executive Officer may accept any information submitted by a manufacturer pursuant to section (b)(7)(C) above after the time established for submission of such information has passed if the

manufacturer could not have reasonably foreseen the need for providing the information within the time period provided. Otherwise, the Executive Officer is not required to accept late information. In determining whether to accept late information, the Executive Officer will consider the lateness of the submission, the manufacturer's reasons for why such information was not timely presented, the materiality of the information to the Executive Officer's final determination, and what effect any delay may have on effective enforcement and the health and welfare of the State.

- (E) The requirements of section (b)(7) shall not be construed to abridge the manufacturer's right to assert any privilege or right provided under California law.
- (F) After receipt of any information submitted by the manufacturer pursuant to section (b)(7)(C) above, the Executive Officer shall consider all information submitted by the manufacturer and may conduct any additional testing that he or she believes is necessary.
- (G) Final Determination.
 - (i) Within 60 days after completing any additional testing that the Executive Officer deemed necessary under section (b)(7)(F) above, the Executive Officer shall notify the manufacturer of his or her final determination regarding the finding of nonconformity of the OBD system in the engine class. The determination shall be made after considering all of the information collected and received, including all information that has been received from the manufacturer.
 - (ii) The notice must include a description of each engine family(ies), OBD group(s), or subgroups thereof, that has been determined to have a nonconforming OBD system and set forth the factual bases for the determination.
- (H) Extensions. The Executive Officer may for good cause extend the time requirements set forth in section (b)(7). In granting additional time to a manufacturer, the Executive Officer shall consider, among other things, any documentation submitted by the manufacturer regarding the time that it reasonably believes is necessary to conduct its own testing, why such information could not have been more expeditiously presented, and what effect any delay caused by granting the extension may have on effective enforcement and the health and welfare of the State. The Executive Officer shall grant a manufacturer a reasonable extension of time upon the manufacturer demonstrating that despite the exercise of reasonable diligence, the manufacturer has been unable to produce relevant evidence in the time initially provided.

(c) *Manufacturer Self-Testing.*

(1) *Purpose.*

To assure that OBD systems on production engines certified on an engine dynamometer are able to detect a fault before emissions exceed the malfunction criteria established in Cal. Code Regs., title 13, sections

1971.1(e) through (g), engine manufacturers shall evaluate engines for each model year, starting with the 2010 model year.

(2) *Engine Selection for Manufacturer Self-Testing.*

(A) After OBD certification of all engines in the model year, a manufacturer shall submit a listing to the Executive Officer of all of the engine families and engine ratings within each family certified for that model year. The Executive Officer will then select the engine family(ies) and the specific engine rating within the engine family(ies) that the manufacturer shall use as a test engine for the test sample group to provide emission test data.

(i) For 2013 through 2015 model year engines, the Executive Officer may not select engines from OBD child ratings subject to “extrapolated OBD” under Cal. Code Regs., title 13, section 1971.1(d)(7.2.3).

(B) Number of test engines.

(i) For the 2010 model year, a manufacturer shall provide emission test data of a test engine from the OBD parent rating.

(ii) For the 2013 and subsequent model years, a manufacturer certifying one to five engine families in a model year shall provide emission test data of a test engine from one engine rating. A manufacturer certifying six to ten engine families in a model year shall provide emission test data from test engines from two engine ratings. A manufacturer certifying eleven or more engine families in a model year shall provide emission test data of test engines from three engine ratings. The Executive Officer may waive the requirement for submittal of data of one or more of the test engines if data have been previously submitted for all of the engine ratings.

(C) Engines to be included in test sample group.

- (i) In selecting engines to be included in a test sample group for manufacturer self-testing, the manufacturer shall include only engines that:
- a. Are certified to the requirements of Cal. Code Regs., title 13, section 1971.1 and California exhaust emission standards.
 - b. Are used in vehicles registered for operation in the United States.
 - c. Have mileage that is between 70 to 80 percent of the certified full useful life mileage and an age of less than the certified full useful life age for the subject engines.
 - d. Have not been tampered with or equipped with add-on or modified parts that would cause the OBD system not to comply with the requirements of Cal. Code Regs., title 13, section 1971.1 or would have a permanent effect on exhaust emission performance.
 - e. Have not been subjected to abuse (e.g., overloading, misfueling) neglect, improper maintenance, or other factors that would cause the OBD system not to comply with the requirements of Cal.

Code Regs., title 13, section 1971.1 or would have a permanent effect on exhaust emission performance.

- f. Have no detected or known malfunction(s) unrelated to the monitor or system being evaluated that would affect the performance of the OBD system. With request to and approval from the Executive Officer, the manufacturer may elect to repair an engine with a detected or known malfunction and then include the engine in the test sample group.
 - g. Have had no major repair to the engine resulting from a collision.
 - h. Have no problem that might jeopardize the safety of laboratory personnel.
- (ii) If the manufacturer discovers, by either evidence presented by the Executive Officer or on its own, that an engine fails to meet one or more of the applicable criteria of section (c)(2)(C)(i), the manufacturer shall notify the Executive Officer of its findings and request approval to remove the engine from the test sample group. If approved by the Executive Officer, the manufacturer shall replace any engine removed with an additional engine selected in accordance with section (c)(2)(C)(i). Test results relying on data from the removed engine shall be recalculated without using the data from the removed engine.
- (3) *Compliance/Enforcement Testing Procedures.*
- (A) Within three calendar years after the model year of the engine (e.g., by the end of calendar year 2013 for a 2010 model year engine), the engine manufacturer shall complete the testing required under section (c)(3).
 - (B) Prior to conducting any testing under section (c)(3), the engine manufacturer shall replace components monitored by the OBD system with components that are sufficiently deteriorated or simulated to cause malfunctions that exceed the malfunction criteria established pursuant to Cal. Code Regs., title 13, sections 1971.1(e) through (g) in a properly operating system. The engine manufacturer may not use components deteriorated or simulated to represent failure modes that could not have been foreseen to occur by the manufacturer (e.g., the use of leaded gasoline in an unleaded engine, etc.).
 - (C) After the test engine(s) has been selected and procured under section (c)(2) above, the engine manufacturer shall perform emission testing for all applicable components/systems according to the certification demonstration testing requirements of Cal. Code Regs., title 13, sections 1971.1(i)(3) and (i)(4).
 - (D) No modifications or replacement of components to make the engine compatible with engine dynamometer testing (e.g., replacement of an air-to-air charge cooler with a water-to-air charge cooler) shall be done without approval by the Executive Officer. The Executive Officer shall approve such requests upon the manufacturer documenting the technical need for such a modification or replacement and providing

engineering data or analysis demonstrating that any such modified part will be configured to simulate the current performance of the actual part removed from the engine (e.g., the water-to-air cooler must be configured to perform similarly to the air-to-air cooler in its current state of aging/deterioration, not to the performance specifications of the air-to-air cooler when new or to the manufacturer's specifications or performance characteristics used on the water-to-air cooler when the engine was originally certified).

- (E) Upon request of the manufacturer, the Executive Officer may extend the deadline set forth in section (c)(3)(A) or reduce the minimum mileage required in section (c)(2)(C)(i)c. upon finding that the manufacturer has demonstrated good cause for the requested extension or mileage reduction.
 - (F) Upon request of the manufacturer, the Executive Officer may approve other compliance/enforcement testing protocols for (c)(3). The Executive Officer shall approve the request upon the manufacturer demonstrating that other testing protocol will provide comparable assurance that the in-use engines comply with the malfunction criteria established pursuant to Cal. Code Regs., title 13, sections 1971.1(e) through (g).
- (4) *Additional Testing.*
- (A) If the results of the OBD emission tests conducted under section (c)(3) indicate that the OBD system properly illuminates the MIL for all component/system monitors before emissions exceed the malfunction criteria defined in Cal. Code Regs., title 13, sections 1971.1(e) through (g), no further testing is required.
 - (B) If the results of the OBD emission tests conducted under section (c)(3) indicate that OBD system does not properly illuminate the MIL for one or more of the component/system monitor(s) before emissions exceed the malfunction criteria defined in Cal. Code Regs., title 13, sections 1971.1(e) through (g), the engine manufacturer shall conduct further testing on additional engines.
 - (i) Within six months after the completion of testing required in section (c)(3), the engine manufacturer shall emission test an additional four engines from the same engine rating and engine family as the test engine.
 - (ii) The engine manufacturer shall only be required to test the component/system monitor(s) for which the OBD emission test results in (b)(3) exceeded the malfunction criteria defined in Cal. Code Regs., title 13, sections 1971.1(e) through (g).
 - (C) For manufacturers subject to section (c)(4)(B) above, no further testing is required if the results of the OBD emission tests conducted under section (c)(4)(B) indicate that OBD system properly illuminates the MIL for the tested component/system monitor(s) before emissions exceed the malfunction criteria defined in Cal. Code Regs., title 13, sections 1971.1(e) through (g) on three or more of the additional test engines.

- (D) For manufacturers subject to section (c)(4)(B) above, if the results of the OBD emission tests conducted under section (c)(4)(B) indicate that the OBD system does not properly illuminate the MIL for one or more of the tested component/system monitor(s) before emissions exceed the malfunction criteria defined in Cal. Code Regs., title 13, sections 1971.1(e) through (g) on two or more of the additional test engines, the engine manufacturer shall conduct further testing.
 - (i) Within six months after the completion of testing required in section (c)(4)(B), the engine manufacturer shall test an additional five engines from the same engine rating and engine family as the previously tested engines.
 - (ii) The engine manufacturer shall test only the component/system monitor(s) for which the OBD emission test results exceeded the malfunction criteria defined in Cal. Code Regs., title 13, sections 1971.1(e) through (g).
- (E) In any testing of the additional engines under section (c)(4), the engine manufacturer shall follow the engine selection and testing procedures set forth in sections (c)(2) and (c)(3) above.
- (5) *ARB Authority to Observe Testing.* The Executive Officer may elect to have ARB personnel observe the testing under sections (c)(3) and (c)(4) above.
 - (A) During conducting of the test procedures described in sections (c)(3) and (c)(4) above, an engine manufacturer, upon receipt of prior notice, must admit or cause to be admitted during operating hours any ARB personnel that has presented proper credentials to any of the following:
 - (i) Any facility where tests or procedures or activities connected with such tests or procedures are performed;
 - (ii) Any facility where a manufacturer procures, inspects, screens, removes from vehicles, works on, configures, or modifies engines for testing; and
 - (iii) Any facility where any record or other document relating to any of the above is located.
 - (B) Upon admission to any facility referred to in section (c)(5)(A) above, any ARB personnel must be allowed to:
 - (i) Inspect and monitor any part or aspect of such procedures, activities, and testing facilities, including monitoring engine preconditioning, emissions tests, and break-in, maintenance, and engine storage procedures;
 - (ii) Verify correlation or calibration of test equipment;
 - (iii) Inspect and make copies of any such records, designs, or other documents; and
 - (iv) Inspect and/or photograph any part or aspect of any such tested engine and any components or equipment used in the testing thereof.
 - (C) Any ARB personnel must be furnished by those in charge of a facility being inspected with such reasonable assistance as may be necessary

to discharge any function listed in section (c)(5)(B) above. The engine manufacturer is required to cause those in charge of a facility operated for its benefit to furnish such reasonable assistance without charge to ARB irrespective of whether or not the engine manufacturer controls the facility.

- (D) The duty to admit or cause to be admitted any ARB personnel applies whether or not the engine manufacturer owns or controls the facility in question and applies both to the domestic and foreign engine manufacturers and facilities. If ARB personnel are prohibited from admission, the Executive Officer may reject any data produced by the manufacturer and may presume that the tested engines do not conform to certification standards. In such circumstances, the Executive Officer may suspend or revoke the engine's certification or take other necessary corrective action.
- (E) For purposes of section (c)(5):
 - (i) "Presentation of credentials" means a display of a document designating a person as an ARB employee.
 - (ii) Where engine, component, or engine storage areas or facilities are concerned, "operating hours" means all times during which employees are at work in the vicinity of the area or facility and have access to it.
 - (iii) Where facilities or areas other than those covered by paragraph (c)(5)(E)(ii) above are concerned, "operating hours" means all times during which an assembly line is in operation or during which testing, maintenance, break-in procedure, production or compilation of records, or any other procedure or activity is being conducted related to certification testing, translation of designs from the test stage to the production stage, or engine manufacture or assembly.
 - (iv) "Reasonable assistance" includes providing clerical, copying, interpretation and translation services, making personnel available upon request to inform ARB personnel of how the facility operates and to answer questions, and performing requested emissions test on any engine that is being, has been, or will be used for certification testing. Such tests must be nondestructive, but may require appropriate break-in. Upon service of a written request from the Executive Officer for the appearance of any employee at a facility qualified for reasonable assistance, the engine manufacturer shall cause the personal appearance of such qualified employee to appear before and assist ARB personnel.
- (6) *Manufacturer Reporting of Self-Testing Results to the Executive Officer.*
 - (A) Within 30 days after completing the testing under section (c)(3), the manufacturer shall submit a report of the results of all the testing to the Executive Officer for review. If further testing is required under section (c)(4), an additional report shall be submitted within 30 days of completing the additional testing. The report(s) must include the following:

- (i) A description of each test engine and the engine family and engine rating to which the test engine belongs to;
- (ii) A description of the test sequence (e.g., the number and types of preconditioning cycles) used for each testing;
- (iii) A description of the modified or deteriorated components used for fault simulation with respect to each testing; and
- (iv) The test results of all testing done under sections (c)(3) and (c)(4) for each test engine, consisting of:
 - a. the weighted emission test results for all measured pollutants for each test; and
 - b. the OBD data specified by Cal. Code Regs., title 13, section 1971.1(i)(4.3.2) collected prior to (or immediately after) each engine shut-down during the testing of sections (c)(3) and (c)(4) including the preconditioning cycles.

(7) *Finding of Nonconformance after Manufacturer Self-Testing.*

After the engine manufacturer has conducted testing pursuant to sections (c)(3) and (c)(4) and the Executive Officer has received the test results pursuant to section (c)(6) above, the Executive Officer shall make a finding of nonconformance of the OBD system in the engine class according to the criteria of section (b)(6)(A).

(8) *Executive Officer Notification to the Manufacturer Regarding Determination of Nonconformance.*

Upon making the determination of nonconformance in section (c)(7) above, the Executive Officer shall follow the procedures and requirements of section (b)(7).

(d) *Remedial Action.*

(1) *Voluntary OBD-Related Recalls.*

If a manufacturer initiates a voluntary OBD-related recall campaign, the manufacturer shall notify the Executive Officer of the recall at least 45 days before owner notification is to begin. The manufacturer shall also submit a voluntary OBD-related recall plan for approval, as prescribed under section (e)(1) below. A voluntary recall plan shall be deemed approved unless disapproved by the Executive Officer within 30 days after receipt of the recall plan.

(2) *Influenced OBD-Related Recalls.*

(A) Upon being notified by the Executive Officer, pursuant to section (b)(7)(G), that an engine class is equipped with a nonconforming OBD system, the manufacturer may, within 45 days from the date of service of such notification, elect to conduct an influenced OBD-related recall of all engines within the engine class for the purpose of correcting the nonconforming OBD systems. Upon such an election, the manufacturer shall, within 45 days from the date of such election, submit an influenced OBD-related recall plan for approval, as prescribed under section (e)(1) below.

- (B) If a manufacturer does not elect to conduct an influenced OBD-related recall under section (d)(2)(A) above, the Executive Officer may order the manufacturer to undertake appropriate remedial action, up to and including the recall and repair of the nonconforming OBD systems.
- (3) *Ordered Remedial Action-Mandatory Recall.*
- (A) Except as provided in sections (d)(3)(B) below, the Executive Officer shall order the recall and repair of all engines in an engine class that have been determined to be equipped with a nonconforming OBD system if enforcement testing conducted pursuant to sections (b) or (c) above or information received from the manufacturer indicates that:
- (i) For major monitors required to meet the in-use performance ratio pursuant to Cal. Code Regs., title 13, section 1971.1(d)(3.2) and subject to the nonconformance criteria of section (b)(6)(B)(ii) on 2016 and subsequent model year engines, the average in-use monitor performance ratio for one or more of the major monitors in the test sample group is less than or equal to 33.0 percent of the applicable required minimum ratio established in Cal. Code Regs., title 13, section 1971.1(d)(3.2.2) (e.g., if the required ratio is 0.100, less than or equal to a ratio of 0.033) or 66.0 percent or more of the vehicles in the test sample group have an in-use monitor performance ratio of less than or equal to 33.0 percent of the applicable required minimum ratio established in Cal. Code Regs., title 13, section 1971.1(d)(3.2.2) for the same major monitor.
 - (ii) For major monitors required to indicate a malfunction before emissions exceed a certain emission threshold, when the engine is tested in a vehicle and operated so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the OBD system is unable to detect and illuminate the MIL for a malfunction of a component/system monitored by the major monitor prior to emissions exceeding:
 - a. For 2013 through 2015 model year OBD parent and child ratings subject to the "full OBD" requirement under Cal. Code Regs., title 13, section 1971.1(d)(7.2.2), three times the applicable major monitor malfunction criteria (e.g., if the malfunction criteria is 2.5 times the applicable standard, recall would be required when emissions exceed 7.5 times the applicable standard, or if the malfunction criteria is the PM standard plus 0.02 g/bhp-hr and the PM standard is 0.01 g/bhp-hr, recall would be required when emissions exceeded 0.09 g-bhp-hr).
 - b. For 2016 through 2018 model year engines:
 - 1. For engine ratings previously certified to Cal. Code Regs., title 13, section 1971.1(d)(7.2.3) for "extrapolated OBD" in the 2013 through 2015 model years, three times the applicable major monitor malfunction criteria (e.g., if the malfunction criteria is 2.5 times the applicable standard, recall would be required when emissions exceed 7.5 times the applicable

- standard, or if the malfunction criteria is the PM standard plus 0.02 g/bhp-hr and the PM standard is 0.01 g/bhp-hr, recall would be required when emissions exceeded 0.09 g-bhp-hr), and
2. For all other engine ratings, three times the malfunction criteria for PM filter monitors subject to Cal. Code Regs., title 13, sections 1971.1(e)(8.2.1)(D) and (E) (e.g., if the malfunction criteria is the PM standard plus 0.02 g/bhp-hr and the PM standard is 0.01 g/bhp-hr, recall would be required when emissions exceeded 0.09 g-bhp-hr) and two times the malfunction criteria for all other applicable major monitors.
 - c. For 2019 and subsequent model year engines, two times the applicable major monitor malfunction criteria (e.g., if the malfunction criteria is 2.5 times the applicable standards, recall would be required when emissions exceed 5.0 times the applicable standards).
- (iii) For misfire monitor:
- a. Gasoline misfire monitor: For 2016 and subsequent model year gasoline engines, the monitor for misfire causing catalyst damage is unable to properly detect and illuminate the MIL for misfire rates that are more than 20 percentage points greater than the misfire rates disclosed by the manufacturer in its certification application as causing catalyst damage (e.g., if the disclosed misfire rate is 12 percent, recall would be required if the misfire rate is greater than 32 percent without proper detection).
 - b. Diesel misfire monitor: For 2019 and subsequent model year diesel engines, the misfire monitor is unable to properly detect and illuminate the MIL for misfire rates that are more than 10 percentage points greater than the misfire malfunction criteria specified in section Cal. Code Regs., title 13, section 1971.1(e)(2.2.2) (e.g., misfire rate more than 15 percent if the misfire malfunction criteria is 5 percent).
- (iv) For 2016 and subsequent model year gasoline engines, when the engine is tested in a vehicle and operated so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the evaporative system monitor is unable to detect and illuminate the MIL for a cumulative leak or leaks in the evaporative system equivalent to that caused by an orifice with a diameter of at least 1.5 times the diameter of the required orifice in Cal. Code Regs., title 13, section 1971.1(f)(7.2.2)(B).
- (v) When the engine is tested in a vehicle and operated so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the OBD system cannot detect and illuminate the MIL for a malfunction of a component that effectively disables a major monitor and the major monitor, by being

disabled, meets the criteria for recall identified in sections (d)(3)(A)(ii) or (iv) above (e.g. is unable to detect and illuminate the MIL for malfunctions that cause FTP emissions to exceed two times the malfunction criteria).

(vi) For 2013 and subsequent model year diesel engines, when the engine is tested in a vehicle and operated so as to reasonably encounter all monitoring conditions disclosed in the manufacturer's certification application, the PM filter monitor is unable to detect and illuminate the MIL for any of the following:

- a. a missing substrate fault in accordance with title 13, CCR section 1971.1(e)(8.2.5); or
- b. a malfunction of the PM filter that causes PM emissions to be equal to or greater than the emission level of the engine, as measured from an applicable emission test cycle (i.e., FTP or SET), with the PM filter substrate completely removed.

(vii) The engine class cannot be tested so as to obtain valid test results in accordance with the criteria identified in section (b)(6)(C)(ii) due to the nonconforming OBD system.

(B) An engine class shall not be subject to mandatory recall if the Executive Officer determines that, even though a monitor meets a criterion set forth in section (d)(3)(A)(i)-(vi) for mandatory recall:

- (i) The OBD system can still detect and illuminate the MIL for all malfunctions monitored by the nonconforming monitor (e.g., monitor "A" is non-functional but monitor "B" is able to detect all malfunctions of the component(s) monitored by monitor "A").
- (ii) The monitor meets the criterion solely due to a failure or deterioration mode of a monitored component or system that could not have been reasonably foreseen to occur by the manufacturer.
- (iii) The failure or deterioration of the monitored component or system that cannot be properly detected causes the engine to be unoperable (e.g., engine stalls continuously or the transmission will not shift out of first gear, etc.) or causes an overt indication such that the operator is certain to respond and have the problem corrected (e.g., illumination of an over-temperature warning light or charging system light that uncorrected will result in an undriveable vehicle, etc.).

(C) A motor vehicle class that is not subject to mandatory recall pursuant to paragraph (d)(3)(B) may still be subject to remedial action pursuant to section (d)(4) below.

(4) *Other Ordered Remedial Action.*

(A) If the Executive Officer has determined based upon enforcement testing conducted pursuant to sections (b) or (c) above or information received from the manufacturer that an engine class is equipped with a nonconforming OBD system and the nonconformance does not fall within the provisions of section (d)(3), he or she may require the

manufacturer to undertake remedial action up to and including recall of the affected engine class.

- (B) In making his or her findings regarding remedial action, the Executive Officer shall consider the capability of the OBD system to properly function. This determination shall be based upon consideration of all relevant circumstances including, but not limited to, those set forth below.
- (i) Whether the manufacturer identified and informed ARB about the nonconformance(s) or whether ARB identified the nonconformance(s) prior to being informed by the manufacturer.
 - (ii) The number of nonconformances.
 - (iii) If the identified nonconformance(s) is with a major monitor(s), the nature and extent of the nonconformance(s), including:
 - a. the degree to which the in-use monitor performance ratio(s) is below the required ratio(s) specified in Cal. Code Regs., title 13, section 1971.1(d)(3.2.2), and
 - b. the amount of the emission exceedance(s) over the established malfunction criteria set forth in Cal. Code Regs., title 13, sections 1971.1(e) through (g) before a malfunction is detected and the MIL is illuminated.
 - (iv) If the identified nonconformance(s) is with a non-major monitor, the nature and extent of the nonconformance(s), including:
 - a. the degree to which the in-use monitor performance ratio(s) (where applicable) is below the required ratio(s) specified in Cal. Code Regs., title 13, section 1971.1(d)(3.2.2),
 - b. the degree to which the monitored component must be malfunctioning or exceed the established malfunction criteria set forth in Cal. Code Regs., title 13, sections 1971.1(e) through (g) before a malfunction is detected and the MIL is illuminated, and
 - c. the effect that the nonconformance(s) has on the operation of a major monitor(s).
 - (v) The impact of the nonconformance on vehicle or engine owners (e.g., cost of future repairs, driveability, etc.) and the ability of the service and repair industry to make effective repairs (e.g., difficulty in accessing fault information, diagnosing the root cause of a failure, etc.).
 - (vi) The degree to which the identified nonconformance(s) complicates, interferes with, disrupts, or hampers a service technician's or inspector's ability to perform a California heavy-duty vehicle or engine inspection.
 - (vii) The failure of the data link connector of the engine class to meet the requirements of Cal. Code Regs., title 13, section 1971.1(h)(2).
 - (viii) The failure of the crankcase ventilation system in the engine class to comply with the requirements of Cal. Code Regs., title 13, section 1971.1(g)(2).

- (ix) The failure of the cooling system monitor in the engine class to properly verify that the cooling system reaches the highest enable temperature used for any other monitor when the engine is operated in a vehicle in the monitoring conditions disclosed in the manufacturer's certification application, or failure to comply with any requirement in Cal. Code Regs., title 13, section 1971.1(g)(1).
 - (x) The estimated frequency that a monitor detects a malfunction and illuminates the MIL when no component malfunction is present (i.e., false MILs).
 - (xi) The estimated frequency that a monitor fails to detect a malfunction and illuminate the MIL when the monitoring conditions, as set forth in the manufacturer's approved certification application, have been satisfied and a faulty or deteriorated monitored component is present (i.e., false passes).
 - (xii) Whether the manufacturer submitted false, inaccurate, or incomplete documentation regarding the identified nonconformance at the time of certification pursuant to Cal. Code Regs., title 13, section 1971.1(j) and the extent to which the false, inaccurate, or incomplete documentation was material to the granting of certification.
- (C) In making the determination, the average tailpipe and evaporative emissions of engines within the affected engine class shall not be considered.
- (5) *Assessment of Monetary Penalties.*
The Executive Officer may seek penalties pursuant to the applicable provisions of the Health and Safety Code for violations of the requirements of Cal. Code Regs., title 13, section 1971.1 or for production engines otherwise failing to be equipped with OBD systems that have been certified by ARB. In determining the penalty amounts that ARB may seek, the Executive Officer shall consider all relevant circumstances including the factors set forth below:
- (A) Whether the manufacturer self-reported the nonconformity or ARB discovered the nonconformity independent of the manufacturer.
 - (B) The nature and degree of the nonconformity and whether the manufacturer should reasonably have discovered the nonconformity and taken corrective action by voluntary OBD-related recall or running changes during the production year.
 - (C) The economic benefits, if any, gained by the manufacturer from not complying with the provisions of Cal. Code Regs., title 13, section 1971.1.
 - (D) The manufacturer's history of compliance with the OBD requirements.
 - (E) The preventative efforts taken by the manufacturer to avoid nonconformance, including any programs followed by the manufacturer to ensure compliance.
 - (F) The manufacturer's efforts to correct the nonconformity once it was identified.

- (G) The innovative nature and magnitude of effort, including the cost of any other proposed remedial action, necessary to correct the nonconformity.
 - (H) The deterrent effect of the penalty.
 - (I) Whether the manufacturer has failed to provide complete and accurate information required to be submitted at the time of certification pursuant to Cal. Code Regs., title 13, section 1971.1(j).
 - (J) The nature and degree that OBD systems on production engines differ from the systems that have been certified by ARB.
- (6) *Notice to Manufacturer for an Ordered Remedial Action.*
- (A) The Executive Officer shall immediately notify the manufacturer upon the Executive Officer determining the type of remedial action to be taken.
 - (B) For remedial actions other than the assessment of monetary penalties, the notice must:
 - (i) specifically set forth the remedial action that is being ordered,
 - (ii) include a description of the engine family(ies), OBD group(s), or subgroup(s) thereof, that has been determined to have a nonconforming OBD system,
 - (iii) set forth the factual bases for the determination, and
 - (iv) designate a date at least 45 days from the date of receipt of such notice by which the manufacturer shall submit a plan, pursuant to section (e)(1) below, outlining the remedial action to be undertaken consistent with the Executive Officer's order. Except as provided in section (d)(7)(C) below, all plans shall be submitted to the Chief, Mobile Source Operations Division, 9528 Telstar Avenue, Suite 4, El Monte, California 91731, within the time limit specified in the notice. The Executive Officer may grant the manufacturer an extension of time for good cause.
 - (C) For cases in which ARB elects to seek monetary penalties pursuant to authority granted under the Health and Safety Code, the Executive Officer shall issue a notice to the manufacturer that he or she will be filing a complaint in the appropriate administrative or civil court forum seeking penalties against the manufacturer for violations of Cal. Code Regs., title 13, section 1971.1. The notice must include a description of the engine family(ies), OBD group(s), or subgroup(s) thereof, that have been determined to have a nonconforming OBD system and set forth the factual bases for the determination.
- (7) *Availability of Public Hearing to Contest Remedial Actions Other than Determination to Seek Monetary Penalties.*
- (A) Within 45 days from the date of receipt of the notice that is required under section (d)(6) above, the manufacturer may request a public hearing pursuant to the procedures set forth in Cal. Code Regs., title 17, section 60055.1, et seq., to contest the findings of nonconformity, the necessity for, or the scope of any ordered remedial action. Pursuant to those procedures, the Executive Officer has the initial

burden of presenting evidence that those parts of the Executive Officer's determination specifically challenged are supported by the facts and applicable law. (Cal. Code Regs., title 17, §60055.32(d)(1).) Each issue of controversy shall be decided based upon the preponderance of the evidence presented at the hearing. (Cal. Code Regs., title 17, §60055.32(h).)

- (B) Notwithstanding the provisions of Cal. Code Regs., title 17, section 60055.17(a)(1), administrative hearings conducted pursuant to a request filed under section (c)(7)(A) above shall be referred to the Office of Administrative Hearings, which shall otherwise follow the procedures established in Cal. Code Regs., title 17, section 60055.1 et seq.
- (C) If a manufacturer requests a public hearing pursuant to section (d)(7)(A) above and if the Executive Officer's determination of nonconformity is confirmed at the hearing, the manufacturer shall submit the required remedial action plan in accordance with section (e)(1) below within 30 days after receipt of the Board's decision.

(e) *Requirements for Implementing Remedial Actions.*

(1) *Remedial Action Plans.*

- (A) A manufacturer initiating a remedial action (voluntary, influenced, or ordered), other than payment of monetary penalties, shall develop a remedial action plan that contains the following information, unless otherwise specified:
 - (i) A description of each engine family, OBD group, or subgroup thereof covered by the remedial action, including the number of engines, the engine families, or subgroups within the identified class(es), the make(s), model(s), and model years of the covered engines, and such other information as may be required to identify the covered engines.
 - (ii) A description of the nonconforming OBD system and, in the case of a recall (whether voluntary, influenced, or ordered), the specific modifications, alterations, repairs, adjustments, or other changes to correct the nonconforming OBD system, including data and/or engineering evaluation supporting the specific corrections.
 - (iii) A description of the method that the manufacturer will use to determine the names and addresses of vehicle or engine owners and the manufacturer's method and schedule for notifying the service facilities and vehicle or engine owners of the remedial action.
 - (iv) A copy of all instructions that the manufacturer will use to notify service facilities about the required remedial action and the specific corrections, if any, that will be required to be made to the nonconforming OBD systems.
 - (v) A description of the procedure to be followed by vehicle/engine owners to obtain remedial action for the nonconforming OBD

system. This must include the date on or after which the owner can have required remedial action performed, the time reasonably necessary to perform the labor to remedy the nonconformity, and the designation of facilities at which the nonconformity can be remedied.

- (vi) If some or all of the nonconforming OBD systems are to be remedied by persons other than dealers or authorized warranty agents of the manufacturer, a description of such class of service agents and what steps, including a copy of all instructions mailed to such service agents, the manufacturer will take to assure that such agents are prepared and equipped to perform the proposed remedial action.
 - (vii) A copy of the letter of notification to be sent to vehicle or engine owners.
 - (viii) A proposed schedule for implementing the remedial action, including identified increments of progress towards full implementation.
 - (ix) A description of the method that the manufacturer will use to assure that an adequate supply of parts will be available to initiate the remedial action campaign on the date set by the manufacturer and that an adequate supply of parts will continue to be available throughout the campaign.
 - (x) A description and test data of the emission impact, if any, that the proposed remedial action may cause to a representative engine from the engine class to be remedied.
 - (xi) A description of the impact, if any, and supporting data and/or engineering evaluation that the proposed remedial action will have on fuel economy, driveability, performance, and safety of the engine class covered by the remedial action.
 - (xii) Any other information, reports, or data which the Executive Officer may reasonably determine to be necessary to evaluate the remedial action plan.
- (B) Approval and Implementation of Remedial Action Plans.
- (i) If the Executive Officer finds that the remedial action plan is designed effectively to address the required remedial action and complies with the provisions in section (e)(1)(A) above, he or she shall notify the manufacturer in writing within 30 days of receipt of the plan that the plan has been approved.
 - (ii) The Executive Officer shall approve a voluntary, influenced, or ordered remedial action plan if the plan contains the information specified in section (e)(1)(A) above and is designed to notify the vehicle or engine owner and implement the remedial action in an expeditious manner.
 - (iii) In disapproving an ordered remedial action plan, the Executive Officer shall notify the manufacturer in writing of the disapproval and the reasons for the determination. The manufacturer shall

resubmit a revised remedial action plan that fully addresses the reasons for the Executive Officer's disapproval within 10 days of receipt of the disapproval notice.

- (iv) Upon receipt of the approval notice of the ordered remedial action plan from the Executive Officer, the manufacturer shall, within 45 days of receipt of the notice, begin to notify vehicle or engine owners and implement the remedial action campaign.
- (v) If the Executive Officer disapproves a voluntary or influenced remedial action plan, the manufacturer shall either accept the proposed modifications to the plan as suggested by the Executive Officer, resubmit a revised remedial action plan that fully addresses the reasons for the Executive Officer's disapproval within 30 days or be subject to an Executive Officer order that the manufacturer undertake appropriate remedial action pursuant to section (d)(2)(B) above.
- (vi) Upon receipt of the voluntary or influenced remedial action approval notice from the Executive Officer, the manufacturer shall begin to notify vehicle or engine owners and implement the remedial action campaign according to the schedule indicated in the remedial action plan.

(2) *Eligibility for Remedial Action.*

- (A) The manufacturer may not condition a vehicle or engine owner's eligibility for remedial action required under section 1971.5 on the proper maintenance or use of the engine.
- (B) The manufacturer shall not be obligated to repair a component which has been modified or altered such that the remedial action cannot be performed without additional cost.

(3) *Notice to Owners.*

- (A) The manufacturer shall notify owners of vehicles or engines in the engine class covered by the remedial order. The notice must be made by first-class mail or by such other means as approved by the Executive Officer. When necessary, the Executive Officer may require the use of certified mail for ordered remedial actions to assure effective notification.
- (B) The manufacturer shall use all reasonable means necessary to locate vehicle or engine owners, including motor vehicle registration lists available from the California Department of Motor Vehicles and commercial sources such as R.L. Polk & Co.
- (C) The notice must contain the following:
 - (i) For ordered remedial actions, a statement: "The California Air Resources Board has determined that your (vehicle or engine) (is or may be) equipped with an improperly functioning on-board emission-related diagnostic system that violates established standards and regulations that were adopted to protect your health and welfare from the dangers of air pollution."

- (ii) For voluntary and influenced remedial actions, a statement: “Your (vehicle or engine) (is or may be) equipped with an improperly functioning on-board emission-related diagnostic system that violates (California or California and Federal) standards and regulations” if applicable as determined by the Executive Officer.
- (iii) A statement that the nonconformity of any such engines will be remedied at the expense of the manufacturer.
- (iv) A statement that eligibility for remedial action may not be denied solely on the basis that the vehicle or engine owner used parts not manufactured by the original equipment engine manufacturer, or had repairs performed by outlets other than the engine manufacturer’s franchised dealers.
- (v) Instructions to the vehicle or engine owners on how to obtain remedial action, including instructions on whom to contact (i.e., a description of the facilities where the vehicles or engines should be taken for the remedial action), the first date that a vehicle or engine may be brought in for remedial action, and the time that it will reasonably take to correct the nonconformity.
- (vi) The statement: “In order to assure your full protection under the emission warranty provisions, it is recommended that you have your (vehicle or engine) serviced as soon as possible. Failure to do so could be determined as lack of proper maintenance of your (vehicle or engine).”
- (vii) A telephone number for vehicle or engine owners to call to report difficulty in obtaining remedial action.
- (viii) A card to be used by a vehicle or engine owner in the event the vehicle or engine to be recalled has been sold. Such card should be addressed to the manufacturer, have postage paid, and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle or engine was sold or transferred.
- (ix) If the remedial action involves recall, the notice must also provide:
 - a. A clear description of the components that will be affected by the remedial action and a general statement of the measures to be taken to correct the nonconformity.
 - b. A statement that such nonconformity, if not corrected, may cause the vehicle or engine to fail an emission inspection.
 - c. A statement describing the adverse effects, if any, of an uncorrected nonconforming OBD system on the performance, fuel economy, or durability of the engine.
 - d. A statement that after remedial action has been taken, the manufacturer will have the service facility issue a certificate showing that the engine has been corrected under the recall program, and that such a certificate will be required to be provided to the Department of Motor Vehicles as a condition for vehicle registration.

- (D) A notice sent pursuant to this section or any other communication sent to vehicle or engine owners or dealers may not contain any statement, expressed or implied, that the OBD system is compliant or that the OBD system will not degrade air quality.
 - (E) The Executive Officer shall inform the manufacturer of any other requirements pertaining to the notification under section (e)(3) which the Executive Officer has determined as reasonable and necessary to assure the effectiveness of the recall campaign.
- (4) *Label Indicating that Recall Repairs Have Been Performed.*
- (A) If the required remedial action involves recall of engine family(ies), OBD group(s), or subgroup(s) thereof, the manufacturer shall require those who perform inspections and/or recall repairs to affix a label to each vehicle that has been inspected and/or repaired.
 - (B) The label must be placed in a location approved by the Executive Officer and must be fabricated of a material suitable for such location in which it is installed and which is not readily removable.
 - (C) The label must contain the remedial action campaign number and a code designating the facility at which the remedial action or inspection to determine the need for remedial action was performed.
- (5) *Proof of Performance of Remedial Action Certificate.*
- If the required remedial action involves a recall, the manufacturer shall provide, through its service agents, to owners of vehicles or engines that have had the remedial action performed a certificate that confirms that the engine has been recalled and that required inspection and/or repairs have been performed. The Executive Officer shall prescribe a format for the certificate, which shall be consistent with the format required in Cal. Code Regs., title 13, section 2117 and section 2129.
- (6) *Record Keeping and Reporting Requirements.*
- (A) The manufacturer shall maintain sufficient records to enable the Executive Officer to conduct an analysis of the adequacy of the remedial action.
 - (B) Unless otherwise specified by the Executive Officer, the manufacturer shall report on the progress of the remedial action campaign by submitting reports for eight consecutive quarters commencing with the quarter immediately after the recall campaign begins. The reports shall be submitted no later than 25 days after the close of each calendar quarter to: Chief, Mobile Source Operations Division, 9528 Telstar Avenue, Suite 4, El Monte, California 91731. For each recall campaign, the quarterly report must contain the following:
 - (i) The engine family and the remedial action campaign number designated by the manufacturer and a brief description of the nature of the campaign.
 - (ii) The date owner notifications began and date completed.
 - (iii) The number of engines involved in the remedial action campaign.

- (iv) The number of engines known or estimated to be equipped with the nonconforming OBD system and an explanation of the means by which this number was determined.
- (v) The number of engines inspected during the campaign since its inception.
- (vi) The number of engines found to be affected by the nonconformity during the campaign since its inception.
- (vii) The number of engines receiving remedial action during the campaign since its inception.
- (viii) The number of engines determined to be unavailable for inspection or remedial action, during the campaign since its inception, due to exportation, theft, scrapping, or other reasons (specify).
- (ix) The number of engines, during the campaign since its inception, determined to be ineligible for remedial action under section (e)(2)(B).
- (x) An initial list, using the following data elements and designated positions, indicating all vehicles or engines subject to recall that the manufacturer has not been invoiced for, or a subsequent list indicating all engines subject to the recall that the manufacturer has been invoiced for since the previous report. The list must be supplied in a standardized computer format to be specified by the Executive Officer. The data elements must be written in "ASCII" code without a comma separating each element. For example: XTY32A71234E-9456123408-25-91A. The add flag (see below) should reflect the vehicles or engines for which the manufacturer has not been invoiced and the delete flag should reflect changes since the previous report. The Executive Officer may change the frequency or format of this submittal depending on the needs of enforcement. The Executive Officer may not, however, require a frequency or format for this submittal that is different in any way from the frequency or format determined by the Executive Officer as required for reporting of data in Cal. Code Regs., title 13, section 2119(a)(10) and section 2133(a)(10).

Data Elements	Positions
• File Code (designated by DMV)	1
• License Plate Number	2-8
• Last three VIN positions	9-11
• Recall ID Number	12-17
• Mfg. ID Number (Mfg. Occupational License Number)	18-22
• Recall Start Date (mmddyyyy)	23-30
• Add or Delete Flag (A/D)	31
• Complete VIN if personalized license plate (File Code "L" or "S")	32-48

- (xi) A copy of any service bulletins issued during the reporting period by the manufacturer to franchised dealerships or other service agents that relate to the nonconforming OBD system and the remedial action and have not previously been reported to the Executive Officer.
- (xii) A copy of all communications transmitted to vehicle or engine owners that relate to the nonconforming OBD systems and the required remedial action and have not been previously reported to the Executive Officer.
- (C) If the manufacturer determines that any of the information submitted to the Executive Officer pursuant to section (e) has changed or is incorrect, the manufacturer shall submit the revised information, with an explanation.
- (D) The manufacturer shall maintain in a form suitable for inspection, such as computer information, storage devices, or card files, and shall make available to the Executive Officer or his or her authorized representative upon request, the names and addresses of vehicle or engine owners:
- (i) To whom notification was sent;
 - (ii) Whose engines were repaired or inspected under the recall campaign;
 - (iii) Whose engines were determined not to be eligible for remedial action because the engines were modified, altered, or unavailable due to exportation, theft, scrapping, or other reason specified in the answer to sections (e)(6)(B)(viii) and (ix).
- (E) The information gathered by the manufacturer to compile the reports required by these procedures must be retained for no less than one year beyond when engines within the engine class, on average, exceed the defined full useful life of the engines and must be made available to authorized personnel of ARB upon request.
- (F) The filing of any report under the provisions of these procedures must not affect the manufacturer's responsibility to file reports or

applications, obtain approval, or give notice under any other provisions of law.

(7) *Extension of Time.*

Upon request of the manufacturer, the Executive Officer may extend any deadline set forth in section 1971.5(e) upon finding that the manufacturer has demonstrated good cause for the requested extension.

(f) *Penalties for Failing to Comply with the Requirements of Section (e).*

(1) In addition to the penalties that may be assessed by the Executive Officer pursuant to section (d) because of a manufacturer's failure to comply with the requirements of Cal. Code Regs., title 13, section 1971.1, a manufacturer may be subject to penalties pursuant to section 43016, Health and Safety Code for failing to comply with the requirements of section (e).

(2) If a manufacturer fails to comply with a voluntary or influenced remedial action plan, the Executive Officer may order remedial action pursuant to section (d) above.

NOTE: Authority cited: Sections 39010, 39600, 39601, 43000.5, 43013, 43016, 43018, 43100, 43101, 43104, 43105, 43105.5, 43106, 43154, 43211, and 43212, Health and Safety Code.
Reference: Sections 39002, 39003, 39010, 39018, 39021.5, 39024, 39024.5, 39027, 39027.3, 39028, 39029, 39031, 39032, 39032.5, 39033, 39035, 39037.05, 39037.5, 39038, 39039, 39040, 39042, 39042.5, 39046, 39047, 39053, 39054, 39058, 39059, 39060, 39515, 39600, 39601, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150, 43151, 43152, 43153, 43154, 43155, 43156, 43204, 43211, and 43212, Health and Safety Code.