

State of California
AIR RESOURCES BOARD

Notice of Public Availability of Modified Text and Availability of Additional Documents and/or Information

PUBLIC HEARING TO CONSIDER TECHNICAL STATUS AND PROPOSED REVISIONS TO ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES AND ENGINES, HEAVY-DUTY ENGINE ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS, AND TO CONSIDER ENFORCEMENT PROVISIONS FOR HEAVY-DUTY ENGINE ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS

Public Hearing Date: May 28, 2009

Public Availability Date: October 20, 2009

Deadline for Public Comment: November 13, 2009

At its May 28, 2009, public hearing, the Air Resources Board (ARB or Board) approved adoption of amendments to the California Code of Regulations, title 13, sections 1968.2 and 1971.1, and adoption of California Code of Regulations, title 13, section 1971.5. Upon becoming operative, the amendments to sections 1968.2 and 1971.1 would respectively update the on-board diagnostic (OBD II) requirements for light-duty and medium-duty vehicles and engines and the heavy-duty on-board diagnostic (HD OBD) requirements for heavy-duty vehicles and engines. Section 1971.5 would establish enforcement procedures and requirements for HD OBD systems.

At the hearing, the Board adopted Resolution 09-37, approving the proposed amendments to sections 1968.2 and 1971.1 and approving section 1971.5 as proposed but with such modifications that staff deemed necessary to address the comments received in response to the text attached to the Initial Statement of Reasons: Staff Report that was released on April 10, 2009. In the Resolution, the Board directed the Executive Officer to incorporate the modifications into the regulatory text, and to make such modifications available for a supplemental comment period of at least 15 days.

Attachment I to this notice contains relevant portions of those sections of the regulations affected by the modifications being proposed with this notice. Proposed amendments that were initially published in the Staff Report released on April 10, 2009 are denoted by single underline for additions to the text and ~~single-strikeout~~ for deletions to the text. Additions to the text proposed with this notice are denoted by double underline and the deletions by ~~double-strikeout~~. The rationale for the modifications is set forth below.

The resolution and all other regulatory documents for this rulemaking are available online at the following ARB website:

<http://www.arb.ca.gov/regact/2009/hdobjd09/hdobjd09.htm>

Summary of Proposed Modifications

Modifications to OBD II Regulation (section 1968.2)

1. Section 1968.2(d)(2.5.2)(B)(iii)d.: As part of the 45-day notice, staff proposed this new criterion that must be met before erasing a permanent fault code to maintain consistency with the HD OBD regulation. Specifically, if a permanent fault code has been stored for a monitor not subject to the minimum in-use ratio requirements and the fault information in the on-board computer has subsequently been cleared, staff proposed that the permanent fault code may be cleared if, in addition to the other conditions set forth in section 1968.2(d)(2.5.2)(B)(iii), the affected monitor has not re-detected the previously identified malfunction. However, when inserting the language in the OBD II regulation, staff mistakenly omitted the model year that this requirement would first be implemented. Staff has corrected the omission by specifying that manufacturers would be required to meet this requirement starting with the 2013 model year.
2. Section 1968.2(d)(4.3.2)(G): To address confusion by manufacturers as to which specific monitors were required to meet the criteria set forth in the section and the conditions that must be met when incrementing the in-use monitor performance denominator, staff has added language that more precisely identifies the monitors covered by the section and has clarified the criteria for incrementing the denominator. Specifically, the language has been modified to clarify that a monitor's denominator cannot be incremented if the vehicle has cumulatively travelled less than 500 miles since the denominator was last incremented.
3. Sections 1968.2(d)(4.3.2)(I): As part of the 45-day notice, staff proposed new criteria that must be met for incrementing in-use monitor performance denominators for monitors that rely on regeneration events to maintain consistency with the HD OBD regulation. However, when inserting the language in the OBD II regulation, staff mistakenly omitted the model year in which the requirement would first be implemented. Staff has corrected the omission by specifying that manufacturers would be required to meet this requirement starting with the 2013 model year. Additionally, the initially proposed language did not include monitors of catalysts that are used to assist other aftertreatment systems during regeneration. The section has been amended to include these monitors because they are tied to regeneration events and it is appropriate that they be required to meet the denominator incrementing criteria in this section.
4. Section 1968.2(f)(3.2.4): As part of the 45-day notice, staff proposed language that eliminated certain misfire conditions from the types of misfire that the OBD II system is required to detect. Specifically, misfire conditions where the misfire rate was more than 50 percent were excluded except in the case where a single component failure could cause a 50 percent or higher rate. To address confusion expressed by

manufacturers as to what the 50 percent or higher rate referred to, staff has added language to clarify that it is 50 percent “of all engine firings.”

5. Section 1968.2(f)(7.2.3): For boost pressure control systems with variable geometry turbochargers, the current language requires functional monitors to indicate a fault when “proper functional response of the system to computer commands does not occur.” Staff recently proposed modifications to similar language in the heavy-duty OBD regulation (section 1971.1(e)(4.2.3)), requiring malfunction detection when “no detectable response to a change in commanded turbocharger geometry occurs,” as part of the 45-day notice. However, staff mistakenly forgot to propose the same changes to section 1968.2. Thus, to maintain consistency between the medium-duty OBD II and HD OBD diesel requirements, staff is proposing to change the language in section 1968.2(f)(7.2.3) to parallel that of section 1971.1(e)(4.2.3).
6. Section 1968.2(f)(17.6): As previously adopted, this section allows manufacturers to disable monitors affected by power take-off (PTO) operation, provided readiness status is cleared (set to “not complete”) while the PTO unit is activated. This was done to allow valid disablement due to the unknown outside influences of the PTO device while still providing an indication to inspectors or technicians during PTO operation that the system is not fully functioning. Manufacturers have expressed concern that the provision as presently written does not cover applications that involve extensive mobile PTO operation (e.g., hydraulic pump operation for applications such as a salt spreader) and have requested a change to delay immediate clearing of the OBD readiness status until 750 minutes of cumulative PTO operation has occurred with the affected monitor disabled. With some further discussion, staff developed the proposed language to allow such an alternative strategy in the near term. Specifically, the change would allow manufacturers to continue to use the existing strategy or to use this new strategy that would not immediately clear all readiness status whenever the PTO is active. The new strategy would keep track of the cumulative time that the PTO device has been activated and the time since the affected monitor(s) had last run. Only if cumulative PTO operation reached 750 minutes and the affected monitor(s) had not run (e.g., neither during PTO operation where it was disabled nor during periods of engine operation between PTO operation, if they occurred) would the readiness status be cleared. This would allow vehicles with frequent PTO activation (including perhaps, PTO devices that cannot be easily disabled during an emission inspection) to output a valid readiness status that would allow for vehicle inspection of emissions and proper OBD II operation in all situations except where a sufficiently long period of time has passed since the monitor(s) last ran.
7. Section 1968.2(g)(6.1): As part of the 45-day notice, staff proposed a change to the criteria that must be used to keep track of cumulative engine idle time to address manufacturers’ concerns that not all engines had access to vehicle speed, yet vehicle speed was a required element of the engine idle definition. This change was made for the HD OBD regulation and, for consistency, also included in the OBD II

regulation. However, when inserting the language in the OBD II regulation, staff mistakenly omitted the model year for which this change in the criteria would mandatorily apply. Staff has corrected the omission by specifying that manufacturers would have the option of using this new criteria immediately or to continue to use the old criteria through 2012 model year. The new criteria would become mandatory starting with the 2013 model year.

Modifications to HD OBD Regulation (section 1971.1)

8. Sections 1971.1(c), (k)(6.1), (l)(1.2.1), and (l)(2.1): In response to questions from industry regarding various possible interpretations, a few changes have been made regarding use of the term “start of production”. In section (c), staff is now proposing modifications to the definition of “start of production” to include references to sections (k) and (l), which use the term in reference to engine and vehicle production.

Staff is proposing modifications to section (k) to refer to “start of engine production” instead of “normal production.” Staff is also proposing to modify the timeline in section (k) for when the Executive Officer may issue retroactive deficiencies to be consistent with the timeline for manufacturers to perform verification of monitoring requirements under section (l)(2) -- specifically, the Executive Officer may issue a retroactive deficiency during either the first 6 months after commencement of the start of engine production or the first 3 months after commencement of the start of vehicle production, whichever ends later. This change is consistent with other parts of section (k), which already provides that retroactive deficiencies may be granted for problems found during this verification testing. Further, section (k) currently states that the deficiency would be “retroactive to the start of production.” However, since the definition of “start of production” in section (c) designates the start as when two percent of the projected engine or vehicle volume have been built, the current language in section (k) would technically exclude engines built before the two percent cut-point has been reached from receiving retroactive deficiencies, which was not staff’s intent. Thus, staff is proposing to modify the language in section (k) to have the deficiency retroactive to “all affected engines within the engine family.”

Lastly, staff is proposing clarifications to sections (l)(1.2.1) and (l)(2.1) because of a manufacturer’s confusion about the requirements. Specifically, the current language states that production engine/vehicle testing of standardized requirements and monitoring requirements is required to be done “within” a number of months after the start of engine or vehicle production. However, the manufacturer interpreted this to mean that testing could not be done on engines/vehicles built “before” the defined start of production (i.e., before the two percent mark), which was not staff’s intention. Thus, staff is proposing modifications to clarify that testing may be done at any point before the specified number of months since start of production has expired.

9. Section 1971.1(d)(2.3.2)(D)(ii)b.3.: As part of the 45-day notice, for purposes of maintaining consistency with the OBD II regulation, staff proposed language more explicitly defining the conditions that must be met for HD OBD systems to clear a permanent fault code. This proposed language also included the one additional new criterion added for OBD II systems (described in item 1. under modifications to section 1968.2 above). However, when inserting this criterion in the HD OBD regulation, staff included this criterion only under the requirements for engines using the ISO 15765-4 protocol, mistakenly omitting this criterion for engines using the SAE J1939 protocol. Thus, staff has corrected the omission by including this criterion for engines using the SAE J1939 protocol.
10. Section 1971.1(d)(4.3.2)(E): As part of the 45-day notice, staff proposed that for monitors such as variable valve timing systems, the denominator be incremented when, among other conditions, the component is commanded to function “on two or more occasions for greater than two seconds ... or for a cumulative time greater than or equal to 10 seconds, whichever occurs first.” Some of the manufacturers have requested that the condition regarding commanding the component to function “on two or more occasions” be deleted as it results in very few opportunities for this criterion to be satisfied without the other criterion also being satisfied and eliminating the former requirement would reduce the software complexity. Other manufacturers, however, requested they be given the option to use the criteria in the OBD II regulation (section 1968.2(d)(4.3.2)(F)) for engines that are utilized in medium-duty and heavy-duty vehicles. The OBD II criteria includes both of the aforementioned criteria originally proposed in the HD OBD language mentioned above. Staff agreed to these requests and is proposing changes to section 1971.1(d)(4.3.2)(E) to reflect this.
11. Section 1971.1(d)(4.3.2)(G): As part of the 45-day notice, staff proposed new criteria that must be met for incrementing in-use monitor performance denominators for components that experience infrequent regeneration events. Specifically, the monitor for these components would be required to increment the denominator when, among other conditions, 750 cumulative minutes of engine runtime had passed since the last time the denominator had incremented. Staff calculated this 750-minute time based on discussions with industry about the expected regeneration frequency of particulate matter (PM) filters. Industry, however, has since requested that this 750-minute time not include engine runtime while the engine is idling, indicating that heavy-duty engines meeting California’s idling rule will have very little filter loading during idle, so including this idle time would not be critical and may result in more frequent incrementing of the denominator with less PM filter regeneration events. Staff, however, disagrees with this request which seems overly conservative but believes increasing the 750-minute time requirement to 800 minutes would address the idling concern. Additionally, staff did not specify when manufacturers were required to mandatorily use this 800 minute criterion and is proposing changes to correct this omission. Specifically, manufacturers would be allowed the option of using either the newly proposed 800 minute criterion or the old

criterion through the 2012 model year. Starting with the 2013 model year, manufacturers would be required to use the new criterion. Lastly, manufacturers expressed confusion as to when the denominator could be incremented relative to this engine run timer because the proposed language used a phrase of 'at least 800 minutes' which led some to believe they could choose different values that were higher or lower than that specified in the regulation. Accordingly, staff rewrote the language to ensure that the denominator would be incremented as soon as all of the criteria have been met, including the 800 minute run time requirement.

12. Section 1971.1(d)(4.3.2)(H): Staff is proposing modifications to this section similar to those being proposed in section 1968.2(d)(4.3.2)(I) of the OBD II regulation (described as item 3. under the modifications to section 1968.2 above).
13. Section 1971.1(e)(2.2.4): Staff has added language in this section for the same reasons given in item 4. under the modifications to section 1968.2 above.
14. Section 1971.1(f)(1.2.1): As part of the 45-day notice, staff proposed that, except as provided in section 1971.1(f)(1.2.6), manufacturers monitor for air-fuel ratio cylinder imbalance faults starting in the 2014 model year. A similar requirement already existed in the OBD II regulation. However, in section 1971.1(f)(1.2.6), staff mistakenly carried over language from the OBD II regulation related to a phase-in that explicitly requires vehicles equipped with separate exhaust gas recirculation (EGR) flow delivery passageways (that deliver EGR to individual cylinders) to monitor for these faults starting in a specific model year (proposed section). Because all 2014 and subsequent model year heavy-duty engines are required to monitor for cylinder imbalance faults, there is no analogous phase-in that would necessitate special handling for vehicles or engines with such EGR systems and the language in section 1971.1(f)(1.2.6) is not necessary. Thus, staff is now proposing to delete section 1971.1(f)(1.2.6) and to modify section 1971.1(f)(1.2.1) accordingly.
15. Section 1971.1(f)(1.3.1): This section indicates which fuel system monitors are required to run continuously. Staff mistakenly omitted fuel system monitoring of adaptive feedback control and thus is proposing to correct this error.
16. Section 1971.1(g)(3): Staff is proposing language (section 1971.1(g)(3.1.6)) to clarify the monitoring requirements for vehicle speed information if the information is used for another OBD monitor. Engine manufacturers have expressed concern about having to comprehensively monitor vehicle speed sensors that are located in the transmission since they have no control over components located outside the engine or of the diagnostics performed by other component suppliers on such sensors. Despite this lack of control, manufacturers have indicated that, historically, they have relied on such outside information and taken appropriate default action when the other components have been identified as faulty. Under the current requirements, such diagnostics would become part of the OBD system and subject to all of the OBD system requirements. Based on discussions between staff and

industry, a compromise was reached solely for vehicle speed information where engine manufacturers would monitor the vehicle speed information to the extent they can and the OBD system would additionally indicate a fault if the vehicle speed information was identified as faulty by diagnostics outside of the engine manufacturer's OBD system (e.g., by the transmission supplier's diagnostics). This proposed change would allow engine manufacturers to continue to follow their historical practice of using outside speed information to ensure engine and emission-related performance and have components that derive such information remain largely outside the scope of the OBD requirements. At the same time, the proposed modification would provide some level of protection that a fault of the vehicle speed information will be remedied in a timely manner to prevent continued disablement of other OBD system monitors.

17. Section 1971.1(g)(5.6): Staff is proposing changes to this section regarding readiness handling during PTO device activation similar to those being proposed in section 1968.2(f)(17.6) of the OBD II regulation (described in item 6. under the modifications to section 1968.2 above). However, unlike the OBD II regulation where manufacturers can elect to use the existing or new readiness handling strategy, the proposed HD OBD language requires use of this alternate readiness handling strategy for 2013 and subsequent model years. Given the much more common expected usage of PTO devices in the heavy-duty market, the new strategy will be required in that it should provide inspectors and technicians with more accurate and useful information about the current state (and recent history) of the diagnostic system.
18. Section 1971.1(h)(4.1): Given recent questions from several manufacturers, staff is proposing modifications to further clarify how readiness status is required to be implemented. In the past, monitors that are required to run continuously were typically excluded from readiness because they, by definition, run continuously and would be completed so quickly that waiting to set readiness status to complete would be negligible. However, several recently adopted monitoring requirements that were originally envisioned to run continuously have been revised to allow justified disablement in fairly common operating conditions. As such, the previous assumptions are not valid as these monitors can indeed be disabled for substantial periods of engine operation and waiting for them to run before setting readiness would not be a negligible period of time. Thus, staff is proposing additional language that more precisely specifies which monitors (e.g., circuit/out-of-range monitors, feedback control monitors) can be excluded from the determination of readiness status. Additionally, the original language indicated that the readiness status for the gasoline fuel system monitor should always indicate "complete," since prior to the 45-day notice, all monitors under the fuel system monitoring requirements were required to run continuously. However, with the recently proposed inclusion of the gasoline fuel system monitoring requirement for air-fuel ratio cylinder imbalance faults, which are not required to run continuously, staff is proposing to have the readiness status for the fuel system set to "complete" only

when the cylinder imbalance monitor has run and completed and have changed the language accordingly. As this cylinder imbalance monitoring requirement is not required until the 2014 model year, sufficient lead time is already being provided to ensure compliance with the proposed changes to the readiness handling requirement.

19. Section 1971.1(h)(4.5.7): This section indicates which specific monitors are not required to meet the standardized test results requirements. Staff mistakenly omitted feedback monitors for diesel exhaust gas sensors and is proposing language to address this.

Modifications to HD OBD Enforcement Regulation (section 1971.5)

20. Section 1971.5(d)(2): Upon receiving word from the Executive Officer that an engine class has a non-conforming OBD system, the manufacturer may “within 45 days from the date of service of such notification, elect to conduct an influenced OBD-related recall” and “shall submit an influenced OBD-related recall plan for approval.” Manufacturers have interpreted this language to mean that they would have 45 days to both elect to conduct an influenced recall and to submit a plan for approval, which was not staff’s intention. Thus, staff is proposing revisions to the regulation to indicate that, upon election by the manufacturer to conduct a recall within 45 days of receiving the notice, manufacturers would have an additional 45 days to submit the recall plan for approval.

Other Minor Modifications

21. In addition to the modifications described above, staff is proposing various nonsubstantive modifications to the regulatory text in sections 1968.2, 1971.1, and 1971.5 to improve clarity and to correct errors that have found by staff and industry.

Additional Document Added to the Record

In the interest of completeness, staff has also added to the rulemaking record and invites comments on ARB Mail-Out MSC#09-22, “Guidelines for Heavy-Duty On-Board Diagnostic (HD OBD) Certification Data,” July 7, 2009. ARB staff proposed modifications to a few sections in section 1971.1 to reference this document. This document is available at the following ARB websites:

<http://www.arb.ca.gov/msprog/obdprog/obdupdates.htm>

and

<http://www.arb.ca.gov/msprog/mailouts/msc0922/msc0922.pdf>

Written comments will only be accepted on the modifications to the originally proposed regulatory text approved by the Board and set forth in Attachment I, and the additional

document that was added to the record. The written comments may be submitted by postal mail or electronic mail submittal as follows:

Postal mail: Clerk of the Board, Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: <http://www.arb.ca.gov/lispub/comm/bclist.php>

Please note that under the California Public Records Act (Gov. Code § 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request. Additionally, this information may become available via Google, Yahoo, and any other search engines.

In order to be considered by the Executive Officer, comments must be directed to ARB in one of the two forms described above and received by the ARB by 5:00 p.m., on the deadline date for public comment listed at the beginning of this notice. Only comments relating to the above-described modifications to the text of the regulations shall be considered by the Executive Officer.

For individuals with sensory disabilities, this document and other related material can be made available in Braille, large print, audiocassette, or computer disk. For assistance, please contact the Clerk of the Board at (916) 322-5594 as soon as possible.

Attachments

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.arb.ca.gov.