

## Summary of Revisions to Attachment A and the Electronic Templates for the HD OBD Mail-Out #MSC 09-22

ARB staff has made revisions to Attachment A and the electronic templates associated with ARB Mail-Out #MSC 09-22, "Guidelines for Heavy-Duty On-Board Diagnostic (HD OBD) Certification Data." These revisions, which are summarized below, have been made in order to expedite the certification review and approval process of HD OBD systems. Manufacturers are required to use these updated forms within 60 days from the release date of the forms. After 60 days from the release date, all manufacturer data submissions provided to ARB that do not use the updated forms will be rejected. Manufacturers are encouraged to begin using these updated forms as soon as possible in order to help expedite their reviews.

- 1) All templates and monitor checklists have been updated with ARB form numbers located at the top left corners.
- 2) Attachment A: Misfire Disablement and Detection Chart: Two data fields have been added to the bottom of the attachment for manufacturers to provide the total number of 1000-rev blocks completed with misfire monitoring active during the test cycle (i.e., the first engine start/two bags/1372 seconds of the test) and the total number of 1000-rev blocks where the number of detected misfires has exceeded the threshold number of misfires.
- 3) HD OBD Rate-Based Data Report Templates: These templates are for HD OBD gasoline applications and HD OBD diesel applications to use for entry and submission to ARB of in-use monitor performance data (e.g., rate-based data) for 2010 and newer model year vehicles as part of section 1971.1 (l)(3) Production Engine/Vehicle Evaluation – Verification and Reporting of In-Use Monitoring Performance. While the new templates still primarily require manufacturers to enter the same data as before, the new templates differ from the old templates in several ways:
  - a) Several column headings/labels for both diesel and gasoline templates have been expanded for clarification as to what should be in the column ((e.g., "MY" changed to "Engine MY" to distinguish it from vehicle/chassis model year) and renamed to be consistent with the terminology used in SAE J1979 and J1939.
  - b) The diesel template has been further revised by adding two columns, "Engine HP Rating" and "Engine Torque Rating" to require manufacturers to enter the horsepower and torque ratings of the particular engine they collected the data from. This will help manufacturers and staff to distinguish between different ratings within the same engine family when evaluating the data.
  - c) The diesel template column heading/labels have also been updated to be compatible with both SAE J1979 and SAE J1939 formats for EGR and VVT monitor reporting. Specifically, the columns for EGR data have been relabeled to indicate they are to be used for EGR (if using SAE J1939) or EGR/VVT (if using SAE J1979) and an additional set of columns have been added for VVT (if using

SAE J1939) since SAE J1939 provides for separate reporting of the two while SAE J1979 combines the two.

- d) The diesel and gasoline templates now include automated formulas that will populate after the manufacturer enters the data in the designated rows at the top of the sheet. These automated formulas will copy the entire data to an identical table below (to address any number format issues from how the manufacturer entered the data) and then apply various criteria to highlight individual data points that may warrant additional investigation or differ substantially from what would be expected. The automated formulas also calculate average ratios and compare them to the applicable enforcement criteria for informational purposes (even though a 15 vehicle sample is insufficient for an official enforcement result and individual vehicles may not meet the minimum denominator criteria to be valid samples for official enforcement testing). These automated formulas will help staff and manufacturers more quickly analyze the data and highlight possible issues for further discussion.
- 4) HD OBD CAL ID and CVN Data Template: This data entry sheet/template for HD OBD applications has been revised by removing the unnecessary column "Engine Serial No." and re-titling the column "Module ID/Address" to "Source Address (hex)" for clarity. Examples for the source address format have also been provided for the allowable protocols in a footnote at the bottom of the sheet. Several other column headings/labels have been expanded for clarification as to what should be in the column (e.g., "Manufacturer" changed to "Engine Manufacturer" to distinguish it from a vehicle/chassis manufacturer).
- 5) HD OBD Monitoring Requirements Checklists: These checklists have been revised with row and column descriptions consolidated in both diesel and gasoline sheets to harmonize the OBD II and HD OBD checklists as much as possible. Errors were also corrected where the previous version cited the wrong regulation section(s) in some of the rows.