



Winston H. Hickox
Agency Secretary

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman

9528 Telstar Avenue • P.O. Box 8001 • El Monte, California 91731 • www.arb.ca.gov



Gray Davis
Governor

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Date: January 16, 2001

TO: ALL OFF-ROAD LARGE SPARK-IGNITION ENGINE MANUFACTURERS

Subject: Format for Electronic and Hard-Copy Submittal of Quarterly Off-Road Large Spark-Ignition Engine (LSI) Manufacturer Production Line Testing Reports

The purpose of this mail out is to provide manufacturers of 2001 and later model-year (MY) LSI engines with the Air Resources Board's (ARB) specified format for use in submitting quarterly production and audit testing reports required by Title 13, California Code of Regulations (CCR), Sections 2437 and 2407. The attachments to this mail out describe the ARB electronic and hard copy formats that are to be used, and include guidance to manufacturers regarding the preparation and submittal of quarterly audit production line testing (PLT) reports.

For PLT reports, LSI engines are grouped into two classes, class 1 for engines less than or equal to 1.0 liter in displacement and class 2 with displacement over 1.0 liter.

Background

ARB's LSI engine regulations state that 2001 and subsequent MY LSI engines with an engine displacement of greater than 1.0 liter (class 2), certified to the applicable emission standards defined in Section 2433(b), are subject to production line testing performed according to the requirements specified in Section 2437. For 2002 and subsequent MY LSI engines certified for sale in California with an engine displacement of less than or equal to 1.0 liter (class 1), manufacturers must comply with the PLT requirements of the Small Off-Road Engine Regulations, Title 13, Section 2407.

For class 2 engines, Section 2433(b) requires LSI engine manufacturers to show that at least 25 percent of its California engine sales comply with the exhaust emission standards in 2001, 50 percent in 2002, and 75 percent in 2003. During the phase-in period, engine families with an engine displacement of greater than 1.0 liter that are not phased in to comply with the applicable emissions standards are not subject to PLT requirements of Section 2437. Class 2 engine small volume manufacturers (SVM) producing less than 2000 LSI engines annually for sale in the United States are also not required to comply with the standards for MYs 2001 through 2003. Manufacturers of 2001 and later LSI engine families that are not certified to the emission standards are only required to report production volumes for these families.

For class 1 engines with displacement of less than or equal to 1.0 liter, there is no similar phase-in schedule and SVM deferment. Starting MY 2002, all class 1 engines must comply with the PLT requirements of the Small Off-Road Engine Regulations, Title 13, Section 2407.

Sampling

For class 1 LSI engines, Section 2407 provides LSI engine manufacturers with an option to use either the cumulative sum (CumSum) or the one percent PLT method for calculating the sample size for testing. The manufacturer must declare its selection method prior to the start of the model-year production and mid-year change is not allowed. For class 2 engines, Section 2437(b)(4) requires LSI manufacturers to use the CumSum PLT method for calculating the sample size, but has an option for small volume manufacturers to use the one percent PLT method of Section 2407.

Testing and Evaluation

Title 13 regulations require LSI engine manufacturers to randomly select engines from emission compliant engine families at the end of the assembly-line, conduct production line testing, and provide the ARB with the production numbers and the test results. Manufacturers of engines with displacements greater than 1.0 liter (class 2) will use the CumSum method for evaluating the test results according to Title 13, Sections 2437(c) and 2437(d), and the small volume manufacturers opting for one percent selection method will use the evaluation method specified for such engine families in Section 2407. For the LSI engine families with displacement of less than or equal to 1.0 liter (class 1), manufacturers have the option of using the CumSum or the one percent (1%) method of Section 2407 for evaluation.

Quarterly Reports

Quarterly reports must be submitted within 30 days of the end of each quarter to:

Mr. R. B. Summerfield, Chief
Mobile Source Operations Division
9528 Telstar Avenue
El Monte, CA 91731.

All quarterly reports for emission-certified LSI engine families must utilize the electronic format provided in this mail out. To report production information for engine families not certified to emission standards, manufacturers are asked to submit the quarterly volumes in the cover memo of the report.

The ARB recommends that manufacturers submit their electronic data on 3.5 inch floppy disks quarterly. Alternate means of transmitting electronic reports are also acceptable (e.g. via the internet); however, ARB prefers that manufacturers submit the

reports on floppy disks along with the required hard copy information to ensure accuracy and confidentiality of the reports.

Reporting Format

The attachments to this mail out provide the format for manufacturers to use for submitting the quarterly electronic and hard copy reports. This electronic format is an update to the draft format provided at the ARB December 1999 workshop and should be followed precisely. All electronic fields must be included in a manufacturer's submittal and any field that does not apply should be left blank.

Attachment 1 describes the content of each of the attachments that follow it, identifies the data fields in each of the electronic files and the hard copy print outs, defines the file names, and specifies the software most readily accepted by the ARB. Attachments 2, 3, 4, and 6 provide the electronic data file structure for each of the ARB-specified files for reporting of required information. Attachment 6 is to be used for LSI engines for which the manufacturer has chosen (where permitted by the regulations) to use the one percent selection method. The ARB format for the hard copy printout of these files is provided in Attachments 5 and 7. Attachment 8 shows an example of a Code Key File, which describes manufacturer-designated codes used primarily in the Individual Engine Test Data file. Attachment 9 lists the three-letter manufacturer identification codes as defined by the United States Environmental Protection Agency for use in engine family names.

Flexibility exists regarding the software a manufacturer may use to prepare the electronic files (see Attachment 1). The hard copy format presented in Attachment 5 was prepared with Microsoft's Access database program. A manufacturer may elect to prepare the hard copy information using any program so long as the required information is provided. The following signed statement and endorsement by an authorized representative of the manufacturer must be included with the quarterly report:

"This report is submitted pursuant to Title 13, Chapter 9, Article 4.5. This production line testing program was conducted in complete conformance with all applicable regulations under the Test Procedures. No emission-related changes to production processes or quality control procedures for the engine family tested have been made during this production line testing program that affect engines from the production line. All data and information reported herein is, to the best of (Company Name) knowledge, true and accurate. I am aware of the penalties associated with violations of the California Code of Regulations and the regulations thereunder."
(Authorized Company Representative.)

To assist manufacturers in the use of the ARB-specified report formats, templates for the four electronic file formats and the Microsoft Access hard copy formats may be downloaded from the ARB web site at:

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

Manufacturers may also request to have the file templates mailed to them on a 3.5 inch floppy disk.

For a copy of the disk or for questions about the quarterly reports, please contact Mr. Satya Devesh of my staff at (626) 575-6704 or by e-mail at sdevesh@arb.ca.gov.

Sincerely,

/s/

R. B. Summerfield, Chief
Mobile Source Operations Division

Attachments

Attachment 1

California Air Resources Board Reporting Format for Production-Line Testing Results For Off-Road Large Spark-Ignition Engines

Title 13, California Code of Regulations (CCR) Section 2437(d), requires manufacturers of LSI engines to submit quarterly reports in electronic and hard copy format. The electronic format for each file is described in Attachments 2, 3, 4, and 6. The formats for the hard copy reports are shown in Attachments 5 and 7. Each of the attachments are described below:

Attachment 2 - Engine Family Information File

This file contains certification-related data for each California-certified engine family, including certification information such as engine type and class, the standard the family is certified to, and the applicable deterioration factors (DFs). Attachment 2 defines the content of each field in this electronic file. The hard copy format for this file is included in the top section of Attachment 5.

Attachment 3 - Engine Family Data Per Quarter File

This file contains emission and production data for each engine family in production. The data fields include quarterly production numbers, the statistical summary of the emission test results with applicable deterioration factors applied, the cumulative sum calculations at the end of the quarter, the actual and required sample size, whether the engine family complies with standards or the action limits, and other engine family specific information. Attachment 3 defines the field contents for this file. Several fields from this file are included in the hard copy summary file shown in Attachment 5.

Attachment 4 - Individual Engine Test Data Per Quarter File

This file consists of the emission data record for each engine/application tested. In addition, each record provides engine specific test parameters, engine identification codes, individual test results and the cumulative sum calculations for the regulated pollutants at the conclusion of each engine test. This file also allows manufacturers to report multiple tests on the same engine and the final average results for multiple tests on the same engine. Attachment 4 defines the fields used in this file and Attachment 5 includes the hard copy format for this file as the Individual Engine Test Data per Quarter portion of the report.

Attachment 5 - Hard Copy Format for the Manufacturer Quarterly Production and Testing Summary File

This hard copy format is divided into three separate areas to summarize the data for each engine family from the Engine Family Information File, the Engine Family Data per

Quarter File, and the Individual Engine Test Data per Quarter File. The top section entitled “Engine Family Information Data” summarizes data from the Engine Family Information File and provides the certification-related information for an engine family. The second section entitled “Engine Family Quarterly Data” summarizes data from the Engine Family Data per Quarter File and includes quarterly testing and production information for an engine family. The final section summarizes data from the Individual Engine Test Data per Quarter File and provides individual engine test results and cumulative sum calculations for each engine tested in an engine family. The file sequence numbers shown in parentheses identify each corresponding field from the electronic data file.

Attachment 6 - Combined Quarters Engine Family File

This file is for engine families using one percent quality audit testing and does not apply to manufacturers that use cumulative sum sampling. This file contains the combined quarter summaries for engine families with less than ten engines tested in a quarter. Each record provides the summary for any engine family with less than ten tests by combining the current quarter’s data with all of the data from the preceding quarter(s). Quarters are combined throughout the engine family model year starting with the most current quarter and adding less current quarters until the sample size contains at least ten engines per family. Attachment 6 defines the content of each field in this file.

Attachment 7 - Hard Copy Format For Combined Quarters Engine Family File

Attachment 7 provides the hard copy report format for the Combined Quarters Engine Family File, along with identifying file sequence numbers in parentheses from the electronic data file.

Attachment 8 - Code Key File

This file describes the manufacturer-designated codes for engine families and consists of a Key for Engine Identification Codes and a Key for Plant and Test Location Codes. The engine identification codes need only be reported during the first quarter of production or as changes occur. Manufacturers may also choose to use codes to explain engine failure and/or other reasons for test failures.

Attachment 8 provides an example of a Code Key File by describing the codes used in the Individual Engine Test Data Per Quarter File (Attachment 4). The format for electronic and hard copy submittal of the Code Key File is left to the discretion of the manufacturer.

Attachment 9 - LSI Engine Manufacturer Code for Quarterly Report

This table provides the three-character manufacturer identification code as defined by the United States Environmental Protection Agency in their standardized engine family name format.

XXX = file extension: XLS for Excel (97 or earlier version) file
MDB for Access (97 or earlier version) file
TXT for comma delimited ASCII Text file