

United States US Environmental Protection Agency Office of Air and Radiation, Office of Transportation and Air Quality

Manufacturer Production Line Testing Report for Marine Compression Ignition Engines

Version Number: 1.3 Last Revision: April 2018

Manufacturer Data Submission Template -- INSTRUCTIONS

I. About

This template allows manufacturers of Marine Compression-Ignition (CI) engines to submit production line testing (PLT) data in a simple, consistent format. Based on the information entered by the submitter, the template performs the required calculation of the final test result and displays the current status of the test. This template is intended for use by manufacturers subject to Part 1042. You may choose to test your engines using the CumSum methodology in accordance with the procedures outlined in 40 CFR Part 1045 or Part 1051 (see 40 CFR 1042.301(d)(2)). This template has not been designed to accept data from the CumSum methodology; if you choose to test your engines using CumSum you must use the separate Marine CI PLT template that was created for this purpose.

It is intended that a copy of this template be created for each Category for which the reporting of PLT results are required. These data must be submitted on a quarterly basis in accordance with 40 CFR Part 1042.345(a). It is intended that one copy of a template be maintained per Category, per year, and results should be cumulative. For instance, the file submitted for the second quarter will contain all test results previously submitted for the first quarter with the results from the second quarter added on. The Summary worksheet provides a field to indicate the associated quarter.

The template is organized into several worksheets, including a "Summary" worksheet that includes both preliminary information as entered by the manufacturer and overall compliance information based on the actual PLT data entered in subsequent worksheets (i.e., Engine Family #1, Engine Family #2, etc.). There are worksheets for 30 engine families and two additional tabs ("Invalid Tests" and "Notes") that allow for the submittal of invalid test results and any other relevant notes that the manufacturer would like to submit with the test results. In all of the worksheets, values may be modified only in cells that are white - the green shaded cells contain either labels or calculated values.

Before entering data in this template, international users should ensure that the settings in Excel for number handling are consistent with the template. Number handling settings that currently specify the use of a comma for the decimal separator and a period for the thousands separator must be temporarily modified to avoid errors within the automatic calculations. To modify the number handling settings when using Excel 2010, go to the file tab at the upper left of the Excel workbook and click "Options". On the resulting window click "Advanced", uncheck the "Use system separators" box and then insert a period for the decimal separator and a comma for the thousands separator. When using Excel 2007, first click the office button, then click "Excel Options". On the resulting window click "Advanced", uncheck the "Use system separators" box and then insert a period for the decimal separator and a comma for the thousands separator. When using Excel 2007, first click the office button, then click "Excel Options". On the resulting window click "Advanced", uncheck the "Use system separators" box and then insert a period for the decimal separator and a comma for the thousands separator.

II. Entering General Information

Before entering data for each engine family, some information on the manufacturer and the Category should be entered into the worksheet labeled "Summary." The top portion of this worksheet includes spaces to enter general information about the PLT test. These fields include:

- Manufacturer contact information (manufacturer name, PLT contact, email, and phone);
 Category (select Category 1, Category 2, or Category 3);
- · Model Year; and,
- Current quarter.

There is an additional field for comments. The projected annual production for the Category, the non-exempt projected annual production, the number of tests completed, and the minimum required sample size for the Category (displayed below the Category selection) are automatically calculated based on entries in the Engine Family worksheets

Based on the current quarter selected, a set of fields will appear where actual quarter-by-quarter production values will be displayed as a Category total based on the sum of the production values entered for each engine family.

The required engine sample size for the Category will be 1% of the sum of all projected production associated with all non-exempt engine families. The calculated required sample size will include two additional tests for each failed engine test (see 40 CFR 1042.310(c)).

•Category 1 engine families certified with projected annual production less than 100 may be exempted from PLT according to 40 CFR 1042.301(a)(2). If actual production exceeds 100 units during the model year, report this to EPA promptly and consult your designated certification representative to see if testing is required. Projected production for any exempt engine family is not factored into the Category total for purposes of calculating the required sample size. For example, if a manufacturer enters data for Engine Family #1, #2, and #3 with a projected production of 60, 55, and 80, the required sample size for the Category will display as zero. If the projected production for Engine Family #3 in this scenario is increased to 200, the required sample size for the Category would be 2.

Projected annual production is entered (and the corresponding required tests are displayed) on a per engine family basis within each engine family worksheet. The value entered in Cell N12 on each engine family worksheet must match the value displayed for EV-CIS Data Element MCI-50 in the dataset for the certified family. However, the actual minimum required engine sample size for the entire Category is displayed in the Summary sheet in cell L16.

IMPORTANT NOTES REGARDING SAMPLE SIZE CALCULATIONS:

1. For Part 1042 Category 1 and 2 engines, the minimum engine sample size for the category is displayed on the Summary sheet.

NOTE: Within each Engine Family worksheet, users may select "N" in cell N16 (in response to the question "Include Results from Engine Family # on Summary Sheet?") if the Engine Family results should not be included in the Compliance Summary results (i.e., if the results are not considered final).

2. If there are questions regarding how to distribute the required tests among the non-exempt Engine Families, manufacturers should obtain additional clarification from their EPA Certification Representative

3. For Category 3, the required sample size is equivalent to the projected annual production (per 1042.302). Each engine must be tested and pursuant to 1042.302(a) and any engine that has failed a test must cease operations until the cause of the failure is resolved.

Note that if there is a pre-approved reduced sample size, the minimum sample size is set equal to this value (assuming that the pre-approved size entered is less than the sample size calculated in accordance with the corresponding guidelines for Category 1 or 2). A reduced sample size may be pre-approved if the engine family has been certified with carry-over emissions data (40 CFR 1042.301(e))

For Part 1042 Category 1 and 2 engines, the sample size status in Column R of the Summary sheet will be displayed for each Engine Family record as either "OPEN" or "PASS". If the total engine sample size is greater than or equal to the minimum required sample size, this status is displayed as "PASS" - otherwise, it is displayed as "OPEN".

III. Entering PLT Engine Test Results

Following the "Summary" worksheet, there are multiple worksheets for "Engine Family #1" through "Engine Family #30." Using these worksheets, enter PLT data for each engine family for CO, PM, HC, and NOx (HC and NOx values are summed and displayed as a combined NOx+HC value, if this option was indicated on the individual Engine Family worksheet). Please note that for Category 3 results only need to be entered for NOx; however, for both Category 1 and Category 2 results must be entered for CO, PM, HC, and NOx. If the engine family is exempt, please select "Y" for "Exempt?" (N18). If an engine family with projected production over 100 has been approved as exempt by EPA, enter zero in cell G18.

Enter data for the test location/description, whether the engine family is a carryover, reduced sample size (if applicable), fuel type and whether the engine family is Recreational or Commercial. Note that 'HC' refers to 'THC' for diesel fuel, 'NMHC' natural gas fuel, and 'THCE' for alcohol fuel. When the fuel type is selected, a note appears reminding the user of the correct HC variant for the selected fuel. Enter the Model Year, Tier, whether NOx+HC is combined, and 40 CFR Part. Note that a selection of "Y" or "N" is required in the field indicating whether NOx+HC is combined in order to ensure that the results in the Summary worksheet are accurate and properly displayed.

The engine family name is then entered followed by the engine family's projected annual production, the start/end dates for production and the deterioration factor type, which must be specified as either additive or multiplicative and is automatically displayed in the "Det Factor Type" fields for all pollutants. The subsequent field should be set to "Y" once all test data have been entered to indicate that the test data are final and can be factored into the compliance assessment within the Summary sheet. Under these fields, data for actual production by quarter can be entered. To the right of these fields, enter the FEL/standard, deterioration factor, and green engine factor (if applicable) for each pollutant.

The engine test results should be entered in the "PLT Engine Test Results" section within the Engine Family worksheet in the order in which they occur. The first fourteen fields includes information specific to the test. The initial result can be entered for each pollutant in the relevant columns. The final result and deteriorated final result are displayed if the "Calc Final Result?" field in column B is "Y." At the far right, open fields are available to enter data related to failed tests (if applicable). Failed tests will result in an upward adjustment to the required sample size (i.e., two additional tests are required for each failed test).

Note that for Category 3 engines, only NOx results need to be entered. The template has been designed so that for Category 3 engines, the engine family PLT status is determined solely on the basis of the NOx results.

The Test Engine worksheets should only include valid test results. Invalid test results should be entered in the "Invalid Tests" worksheet. Any additional notes or information relevant to the PLT information for the engine family can be included in the "Notes" worksheet.

IV. Compliance Summary

The far right portion of the "Summary" worksheet (below the general information entered previously, as described in Section II) includes the summary compliance information for the PLT tests as entered in the Engine Family worksheets. As described below, the summary information shows a Sample Size Status, Test Status, and a Compliance Status for each engine family.

• Sample Size Status: This value will be OPEN if the number of tests performed for the engine family is less than the required amount (which includes any follow-up test added due to failure(s)). Otherwise, this value will be PASS.

• Test Status: This value will be FAIL if a failed status is indicated for any one pollutant. This value will be PASS if all pollutants for the engine family have a passing status.

• Compliance Status: If both the test status and sample size status have a value of PASS, the compliance status also has a value of PASS. If the test status has a value of FAIL, then the compliance status will have a value of FAIL regardless of the sample size status value. If the test status has a value of PASS and the sample size status has a value of OPEN, then the compliance status value will be OPEN.

In addition to the sample size status for engine families, for Part 1042 engines a sample size status is displayed for the category as well. The value of this status will be either OPEN or PASS. If the value is OPEN then a message will appear indicating how many additional tests are needed across the category.

V. Troubleshooting

If odd or unexpected results are displayed in the "Summary" worksheet, the following items can be checked:

- Has a category been specified on the "Summary" worksheet and a projected production volume in the Engine Family worksheets?
- Is "Y" indicated for the "Include Results from Engine Family #n on Summary Sheet?*" field for each completed Engine Family tab?
- Is the entry for "Exempt?" (N18) accurate? This should be "Y" if projected annual production is < 100, and "N" if projected annual production is > 100 or Engine Category is Category 2 or Category 3.
- Are all engine tests entered sequentially without skipping rows?
- Is "Y" indicated within the "Calc Final Result?" field for rows in which a final result is to be calculated?
- Is there any information that has been inadvertently omitted within any one of the required data fields?

Paperwork Reduction Act Notice

The public reporting and recordkeeping burden for this collection of information is estimated to average 12 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NVV, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address. OMB No. 2060-0287 Approval Expires on 3/31/2023

EPA Form 5900-298



United States US Environmental Protection Agency

Office of Air and Radiation, Office of Transportation and Air Quality

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Version Number: 1.3 Last Revision: April 2018

Manufacturer and Engine Ca	tegory Information			Submission Date	
Manufacturer: PLT Test Contact: Email Address: Phone #:		Category: Projected Annual Production For Category: Number of Completed Engine Family Tests: Minimum Required Engine Sample Size For Category:	Model Year: Current Quarter: Non-Exempt Production:		
Comments:				Total Production 0	

Compliance Summary

		CO			PM			NOx+HC			NOx			HC						
Engine Family	Final Result (g/kW-hr)	Standard (g/kW- hr)	Compliance Status	Final Result (g/kW-hr)	Standard/FEL (g/kW-hr)	Compliance Status	Final Result (g/kW-hr)	Standard/FEL (g/kW-hr)	Compliance Status	Final Result (g/kW-hr)	Standard/FEL (g/kW-hr)	Compliance Status	Final Result (g/kW- hr)	Standard/FEL (g/kW- hr)	Compliance Status	Sample Size Status	Test Status	Compliance Status	Number Passed:	0
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Information: Engine Family Munufacturer: PLT Test Contact: Email Address: President of Secretarian Test Location 4 Description Carryover?: Pre-sporved Reduced Rec Recreational/commercial: Model Year: Ter: Combined MOx+HC? 40 CFR Part: Comments:	tite Sample Size:		Engine Family: Projected Annual Date of Starf of Ma Deteriorial Control Fac Deteriorial Control Fac Include Results fr Required Test (in Notes:	odel Year Producti del Year Productio tor Type: om Engine Family scluding failure fol	on: r #19 on Summary llow-ups) -		Exempt?			Current C 20 Standard Jnits 20 Det Factor 20 Green Engli		g/kW-hr	Pi U Pi	Current M Standard o Inits M Det Factor vet Factor Yee Factor W Green Engli		g/kW-tur	- - 	Current H HC Standard Units HC Det Factor Det Factor Type HC Green Engine	-	g/kW-ty	NOX S Units NOX I Det Fa	tandard or FE	F	g/kW-hr					Test Cycle Options 1 = 4 Adults General 2 = 5 Mode Forenal 3 = 4 Mode Constant 5 = 6 Mode Variable S C = 8 Mode Variable S O = Other	Cycle (E3) Inal Cycle (E5) Speed Propulsion Cyc Speed Auxiliary Cycle Speed Auxiliary Cycle
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Invalid PLT Engine Test Results

						Engine		Green Engine	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours	Service Acc.	CO Final Result (g/kW- hr)	PM Final Result (g/kW-	HC+NOx Final Result (g/kW-	NOx Final Result (g/kW-	HC Final Result (g/kW-		
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United States US Environmental Protection Agency Office of Air and Radiation, Office of Transportation and Air Quality

Manufacturer Production Line Testing Report for Marine Compression Ignition Engines

Version Number: 1.3 Last Revision: April 2018

Manufacturer Notes

Please provide any additional notes here.

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The public reporting and recordkeeping burden for this collection of information is estimated to average 12 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

OMB No. 2060-0641 Approval Expires on 3/31/2020 EPA Form 5900-298