



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.

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:

- Submission Date;
- 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?

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EPA Form 5900-298



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Basic Information: Engine Family #4

<p>Manufacturer: _____</p> <p>PLT Test Contact: _____</p> <p>Email Address: _____</p> <p>Phone #: _____</p> <p>Test Location & Description: _____</p> <p>Carryover? _____</p> <p>Pre-approved Reduced Required Sample Size: _____</p> <p>Fuel Type: _____</p> <p>Recreational/Commercial: _____</p> <p>Model Year: _____</p> <p>Tier: _____</p> <p>Combined NOx+HC? _____</p> <p>40 CFR Part: _____</p>	<p>Engine Family: _____</p> <p>Projected Annual Production: _____</p> <p>Date of Start of Model Year Production: _____</p> <p>Date of End of Model Year Production: _____</p> <p>Deterioration Factor Type: _____</p> <p>Include Results from Engine Family #4 on Summary Sheet? _____</p> <p>Required Tests (including failure follow-ups): _____</p> <p>Notes: _____</p> <p>Exempt? _____</p>
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Current CO Result	Current PM Result	Current HC Result	Current NOx Result
CO Standard Units CO Det Factor Det Factor Type CO Green Engine Factor	PM Standard or FEL Units PM Det Factor Det Factor Type PM Green Engine Factor	HC Standard Units HC Det Factor Det Factor Type HC Green Engine Factor	NOx Standard or FEL Units NOx Det Factor Det Factor Type NOx Green Engine Factor

Test Cycle Options
 1 = 4-Mode General Cycle (E3)
 2 = 5-Mode Recreational Cycle (E5)
 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
 0 = Other

Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments: _____

PLT Engine Test Results: Engine Family #4

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments		
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Basic Information: Engine Family #7

<p>Manufacturer: _____</p> <p>PLT Test Contact: _____</p> <p>Email Address: _____</p> <p>Phone #: _____</p> <p>Test Location & Description: _____</p> <p>Carryover? _____</p> <p>Pre-approved Reduced Required Sample Size: _____</p> <p>Fuel Type: _____</p> <p>Recreational/Commercial: _____</p> <p>Model Year: _____</p> <p>Tier: _____</p> <p>Combined NOx+HC? _____</p> <p>40 CFR Part: _____</p>	<p>Engine Family: _____</p> <p>Projected Annual Production: _____</p> <p>Date of Start of Model Year Production: _____</p> <p>Date of End of Model Year Production: _____</p> <p>Deterioration Factor Type: _____</p> <p>Include Results from Engine Family #7 on Summary Sheet? _____</p> <p>Required Tests (including failure follow-ups): _____</p> <p>Notes: _____</p> <p>Exempt? _____</p>
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Current CO Result	Current PM Result	Current HC Result	Current NOx Result																																
<table border="0"> <tr><td>CO Standard Units</td><td>_____</td></tr> <tr><td>CO Det Factor</td><td>_____ g/kW-hr</td></tr> <tr><td>Det Factor Type</td><td>_____</td></tr> <tr><td>CO Green Engine Factor</td><td>_____</td></tr> </table>	CO Standard Units	_____	CO Det Factor	_____ g/kW-hr	Det Factor Type	_____	CO Green Engine Factor	_____	<table border="0"> <tr><td>PM Standard or FEL Units</td><td>_____</td></tr> <tr><td>PM Det Factor</td><td>_____ g/kW-hr</td></tr> <tr><td>Det Factor Type</td><td>_____</td></tr> <tr><td>PM Green Engine Factor</td><td>_____</td></tr> </table>	PM Standard or FEL Units	_____	PM Det Factor	_____ g/kW-hr	Det Factor Type	_____	PM Green Engine Factor	_____	<table border="0"> <tr><td>HC Standard Units</td><td>_____</td></tr> <tr><td>HC Det Factor</td><td>_____ g/kW-hr</td></tr> <tr><td>Det Factor Type</td><td>_____</td></tr> <tr><td>HC Green Engine Factor</td><td>_____</td></tr> </table>	HC Standard Units	_____	HC Det Factor	_____ g/kW-hr	Det Factor Type	_____	HC Green Engine Factor	_____	<table border="0"> <tr><td>NOx Standard or FEL Units</td><td>_____</td></tr> <tr><td>NOx Det Factor</td><td>_____ g/kW-hr</td></tr> <tr><td>Det Factor Type</td><td>_____</td></tr> <tr><td>NOx Green Engine Factor</td><td>_____</td></tr> </table>	NOx Standard or FEL Units	_____	NOx Det Factor	_____ g/kW-hr	Det Factor Type	_____	NOx Green Engine Factor	_____
CO Standard Units	_____																																		
CO Det Factor	_____ g/kW-hr																																		
Det Factor Type	_____																																		
CO Green Engine Factor	_____																																		
PM Standard or FEL Units	_____																																		
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PM Green Engine Factor	_____																																		
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Det Factor Type	_____																																		
NOx Green Engine Factor	_____																																		

Test Cycle Options

- 1 = 4-Mode General Cycle (E3)
- 2 = 5-Mode Recreational Cycle (E5)
- 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
- 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
- 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
- 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
- 0 = Other

Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments: _____

PLT Engine Test Results: Engine Family #7

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments	
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Version Number: 1.3 Last Revision: April 2018

Basic Information: Engine Family #18

Manufacturer: _____
 PLT Test Contact: _____
 Email Address: _____
 Phone #: _____
 Test Location & Description: _____
 Carryover?: _____
 Pre-approved Reduced Required Sample Size: _____
 Fuel Type: _____
 Recreational/Commercial: _____
 Model Year: _____
 Tier: _____
 Combined NOx+HC? _____
 40 CFR Part: _____

Engine Family: _____
 Projected Annual Production: _____
 Date of Start of Model Year Production: _____
 Date of End of Model Year Production: _____
 Deterioration Factor Type: _____
 Include Results from Engine Family #18 on Summary Sheet? _____
 Required Tests (including failure follow-ups) _____
 Notes: _____
 Exempt? _____

Current CO Result

CO Standard Units	_____
CO Det Factor	_____ g/kW-hr
Det Factor Type	_____
CO Green Engine Factor	_____

Current PM Result

PM Standard or FEL Units	_____
PM Det Factor	_____ g/kW-hr
Det Factor Type	_____
PM Green Engine Factor	_____

Current HC Result

HC Standard Units	_____
HC Det Factor	_____ g/kW-hr
Det Factor Type	_____
HC Green Engine Factor	_____

Current NOx Result

NOx Standard or FEL Units	_____
NOx Det Factor	_____ g/kW-hr
Det Factor Type	_____
NOx Green Engine Factor	_____

Test Cycle Options
 1 = 4-Mode General Cycle (E3)
 2 = 5-Mode Recreational Cycle (E5)
 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
 0 = Other

Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments: _____

PLT Engine Test Results: Engine Family #18

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments		
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Basic Information: Engine Family #22

Manufacturer: PLT Test Contact: Email Address: Phone #: Test Location & Description: Carryover?: Pre-approved Reduced Required Sample Size: Fuel Type: Recreational/Commercial: Model Year: Tier: Combined NOx+HC? 40 CFR Part:	Engine Family: Projected Annual Production: Date of Start of Model Year Production: Date of End of Model Year Production: Deterioration Factor Type: Include Results from Engine Family #22 on Summary Sheet? Required Tests (including failure follow-ups) Notes:	Exempt?
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Current CO Result	Current PM Result	Current HC Result	Current NOx Result
CO Standard Units CO Det Factor Det Factor Type CO Green Engine Factor	PM Standard or FEL Units PM Det Factor Det Factor Type PM Green Engine Factor	HC Standard Units HC Det Factor Det Factor Type HC Green Engine Factor	NOx Standard or FEL Units NOx Det Factor Det Factor Type NOx Green Engine Factor

Test Cycle Options
 1 = 4-Mode General Cycle (E3)
 2 = 5-Mode Recreational Cycle (E5)
 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
 0 = Other

Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments:

PLT Engine Test Results: Engine family #22

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments		
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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

Basic Information: Engine Family #23

Manufacturer: _____
 PLT Test Contact: _____
 Email Address: _____
 Phone #: _____
 Test Location & Description: _____
 Carryover?: _____
 Pre-approved Reduced Required Sample Size: _____
 Fuel Type: _____
 Recreational/Commercial: _____
 Model Year: _____
 Tier: _____
 Combined NOx+HC? _____
 40 CFR Part: _____

Engine Family: _____
 Projected Annual Production: _____
 Date of Start of Model Year Production: _____
 Date of End of Model Year Production: _____
 Deterioration Factor Type: _____
 Include Results from Engine Family #23 on Summary Sheet? _____
 Required Tests (including failure follow-ups) _____
 Notes: _____
 Exempt? _____

Current CO Result

CO Standard Units	_____
CO Det Factor	g/kW-hr
Det Factor Type	_____
CO Green Engine Factor	_____

Current PM Result

PM Standard or FEL Units	_____
PM Det Factor	g/kW-hr
Det Factor Type	_____
PM Green Engine Factor	_____

Current HC Result

HC Standard Units	_____
HC Det Factor	g/kW-hr
Det Factor Type	_____
HC Green Engine Factor	_____

Current NOx Result

NOx Standard or FEL Units	_____
NOx Det Factor	g/kW-hr
Det Factor Type	_____
NOx Green Engine Factor	_____

Test Cycle Options
 1 = 4-Mode General Cycle (E3)
 2 = 5-Mode Recreational Cycle (E5)
 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
 0 = Other

Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments: _____

PLT Engine Test Results: Engine Family #23

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments		
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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

Basic Information: Engine Family #26

Manufacturer: PLT Test Contact: Email Address: Phone #: Test Location & Description: Carryover?: Pre-approved Reduced Required Sample Size: Fuel Type: Recreational/Commercial: Model Year: Tier: Combined NOx+HC? 40 CFR Part:	Engine Family: Projected Annual Production: Date of Start of Model Year Production: Date of End of Model Year Production: Deterioration Factor Type: Include Results from Engine Family #26 on Summary Sheet? Required Tests (including failure follow-ups) Notes:	<input type="checkbox"/> Exempt?
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Current CO Result	Current PM Result	Current HC Result	Current NOx Result
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CO Standard Units	<input type="text"/>	PM Standard or FEL Units	<input type="text"/>	HC Standard Units	<input type="text"/>	NOx Standard or FEL Units	<input type="text"/>
CO Det Factor	<input type="text"/>	PM Det Factor	<input type="text"/>	HC Det Factor	<input type="text"/>	NOx Det Factor	<input type="text"/>
Det Factor Type	<input type="text"/>	Det Factor Type	<input type="text"/>	Det Factor Type	<input type="text"/>	Det Factor Type	<input type="text"/>
CO Green Engine Factor	<input type="text"/>	PM Green Engine Factor	<input type="text"/>	HC Green Engine Factor	<input type="text"/>	NOx Green Engine Factor	<input type="text"/>

Test Cycle Options
 1 = 4-Mode General Cycle (E3)
 2 = 5-Mode Recreational Cycle (E5)
 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
 0 = Other

Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments:

PLT Engine Test Results: Engine Family #26

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments	
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Manufacturer Production Line Testing Report for Marine Compression Ignition Engines
Version Number: 1.3 Last Revision: April 2018

Basic Information: Engine Family #27

Manufacturer: PLT Test Contact: Email Address: Phone #: Test Location & Description: Carryover?: Pre-approved Reduced Required Sample Size: Fuel Type: Recreational/Commercial: Model Year: Tier: Combined NOx+HC? 40 CFR Part:	Engine Family: Projected Annual Production: Date of Start of Model Year Production: Date of End of Model Year Production: Deterioration Factor Type: Include Results from Engine Family #27 on Summary Sheet? Required Tests (including failure follow-ups): Notes:	Exempt?
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Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments:

Current CO Result	Current PM Result	Current HC Result	Current NOx Result
CO Standard Units CO Det Factor Det Factor Type CO Green Engine Factor	PM Standard or FEL Units PM Det Factor Det Factor Type PM Green Engine Factor	HC Standard Units HC Det Factor Det Factor Type HC Green Engine Factor	NOx Standard or FEL Units NOx Det Factor Det Factor Type NOx Green Engine Factor

Test Cycle Options
 1 = 4-Mode General Cycle (E3)
 2 = 5-Mode Recreational Cycle (E5)
 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
 0 = Other

PLT Engine Test Results: Engine Family #27

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments	
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United States
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 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

Basic Information: Engine Family #29

Manufacturer: _____
 PLT Test Contact: _____
 Email Address: _____
 Phone #: _____
 Test Location & Description: _____
 Carryover?: _____
 Pre-approved Reduced Required Sample Size: _____
 Fuel Type: _____
 Recreational/Commercial: _____
 Model Year: _____
 Tier: _____
 Combined NOx+HC? _____
 40 CFR Part: _____

Engine Family: _____
 Projected Annual Production: _____
 Date of Start of Model Year Production: _____
 Date of End of Model Year Production: _____
 Deterioration Factor Type: _____
 Include Results from Engine Family #29 on Summary Sheet? _____
 Required Tests (including failure follow-ups) _____
 Notes: _____
 Exempt? _____

Current CO Result

CO Standard Units	_____
CO Det Factor	g/kW-hr _____
Det Factor Type	_____
CO Green Engine Factor	_____

Current PM Result

PM Standard or FEL Units	_____
PM Det Factor	g/kW-hr _____
Det Factor Type	_____
PM Green Engine Factor	_____

Current HC Result

HC Standard Units	_____
HC Det Factor	g/kW-hr _____
Det Factor Type	_____
HC Green Engine Factor	_____

Current NOx Result

NOx Standard or FEL Units	_____
NOx Det Factor	g/kW-hr _____
Det Factor Type	_____
NOx Green Engine Factor	_____

Test Cycle Options
 1 = 4-Mode General Cycle (E3)
 2 = 5-Mode Recreational Cycle (E5)
 3 = 4-Mode Constant Speed Propulsion Cycle (E2)
 4 = 5-Mode Constant Speed Auxiliary Cycle (D2)
 5 = 6-Mode Variable Speed Auxiliary Cycle (G2)
 6 = 8-Mode Variable Speed Auxiliary Cycle (C1)
 0 = Other

Total Actual Production (to date):	Q1 Actual	Q2 Actual	Q3 Actual	Q4 Actual	Total
					0

Comments: _____

PLT Engine Test Results: Engine Family #29

Calc. Final Result?	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Initial Result	Rounded CO Initial Result	CO Final Result	Det. CO Final Result	PM Initial Result	Rounded PM Initial Result	PM Final Result	Det. PM Final Result	HC Initial Result	Rounded HC Initial Result	HC Final Result	Det. HC Final Result	NOx Initial Result	Rounded NOx Initial Result	NOx Final Result	Det. NOx Final Result	Reason for Failed Test (if applicable)	Remedy	Repairs	Test Cycle	Comments		
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United States
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 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

Basic Information: Invalid Tests

Manufacturer:
 PLT Test Contact:
 Email Address:
 Phone #:
 Test Location & Description:

Total Production:
 Date of Start of Model Year Production:
 Date of End of Model Year Production:

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

Comments:

Invalid PLT Engine Test Results

Engine Family	Test Number	Test Date	Test Time	Test Qtr	Engine ID	Engine Make	Engine Configuration	Build Date	Green Engine Factor Applied?	Green Engine Factor Determination Method	Service Hours (or miles) Accumulation	Service Hours Location	Service Acc. Procedure	CO Final Result (g/kW-hr)	PM Final Result (g/kW-hr)	HC+NOx Final Result (g/kW-hr)	NOx Final Result (g/kW-hr)	HC Final Result (g/kW-hr)	Reason for Invalid Test	Additional Comments	
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United States
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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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OMB No. 2060-0641
Approval Expires on
3/31/2020
EPA Form 5900-298