





United States
Environmental Protection Agency
Office of Transportation and Air Quality

Manufacturer Averaging, Banking, and Trading Report for Marine Spark Ignition Engines

Last Revision: August 2010 Version Number: 2.1

Calculation of Production-Weighted Maximum Power

The Average Power value corresponding to the final configuration for a particular engine family is the maximum power value used in the exhaust emission credit calculation (Current MY Credit Calc-EXHAUST worksheet)

Table with 6 columns: Engine Family Name, Configuration, Maximum Power Rating (kW), Production Volume, Cum. Production Volume, Average Power (kW). The table contains multiple empty rows for data entry.

Engine Family Name	Configuration	Maximum Power Rating (kW)	Production Volume	Cum. Production Volume	Average Power (kW)

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**Field Descriptions (Exhaust and Evaporative Current MY Credit Calculations)**

FIELD	DESCRIPTION	
	EXHAUST	EVAP
Engine Family Name/ Emission Family Name of Vessel	Enter the 12-character emission family name for the engine.	Enter the 12-character emission family name for the vessel.
Pollutant	Select the applicable pollutant (HC+NO <sub>x</sub> or CO) from the drop-down menu. The engine family name will have separate line items for each pollutant.	NA
Permeation Family Name for Fuel Tank	NA	Enter the permeation family name for the fuel tank for which your evaporative emission ABT credits are being generated or used.
Maximum Power (kW)	Enter the maximum modal power in kW for the emission data test engine over the certification test cycle. The maximum power shall be determined as directed in 40 CFR 1045.140(d) and can be calculated using the Maximum Power Calculation spreadsheet.	NA
Engine Type	Select one of the following two options: 1) Outboard/Personal Watercraft or 2) Sterndrive/Inboard. Note that for Small Volume manufacturers (i.e., if "Yes" is selected in the Small Volume field above the data entry cells), the resulting credit totals for all SD/I engine families will be displayed below the data entry cells as "SD/I - Small Volume" and the corresponding values in the "Standard" column will reflect the provisions for delayed compliance under 40 CFR 1045.145(a).	NA
Tank Category	NA	Select one of the following two options: 1) Personal Watercraft Fuel Tank; 2) Other Installed Fuel Tank.
Production Volume	Enter the production volume of the engine family.	Enter the production volume of the engine family.
Total Area (m <sup>2</sup> )	NA	Enter the combined internal surface area of all fuel tanks in the family, in m <sup>2</sup> .
FEL (g/kW-hr)	Enter the applicable Family Emission Limit for the engine family in g/kW-hr. (OB/PWC- 40 CFR 1045.103; SD/I- 40 CFR 1045.104; SD/I-Jet Boat- 40 CFR 1045.701(d); Special Provisions- 40 CFR 1045.145(b),(c), and (f)).	Enter the applicable Family Emission Limit for the emission family in g/m <sup>2</sup> /day. (40 CFR 1045.112(b))
Jet Boat Engine Using Credits from Identical OB/PWC Engine? (Yes/No)	Select "Yes" or "No" to indicate whether the jet boat engine family is the same as a certified OB/PWC engine family. Note that Jet Boat Engines are subject to SD/I engine standards. A manufacturer may use exhaust ABT credits from OB/PWC engines subject to the provisions in 40 CFR 1045.701(d).	NA
Name of Associated OB/PWC Engine Family	For engine families with Jet Boat Engine Using Credits from Identical OB/PWC Engine? equal to "Yes," enter the name of the associated OB/PWC engine family. Note that the Jet Boat engine must be the same model as an OB/PWC engine model, but have sales less than the equivalent OB/PWC family.	NA
Useful Life (hours)	Select the useful life in hours (350 for OB/PWC or 480 for SD/I). A manufacturer may input a different useful life for exhaust emissions only if it has received approval from EPA for a longer useful life under 40 CFR 1045.103 or 1045.105.	The useful life is 5 years for personal watercraft and 10 years for all other vessels and for portable marine fuel tanks (40 CFR 1045.112). This value is not displayed in the 'Current MY Credit Calc-EVAP' worksheet, but is included in the credit calculation.
Load Factor	This should be 0.207 in most cases. A manufacturer may input a different load factor only if it has received approval from EPA for a Special Test Procedure approved under 40 CFR 1065.10(c)(2).	NA
Test Temperature	NA	Select either 28°C or 40°C to indicate relevant test temperature.
Adjustment Factor	NA	This field will be automatically populated based on the Test Temperature selection. The Adjustment Factor will be 1.0 if the fuel tank testing was performed at 28° C, or 0.60 if the fuel tank testing was performed at 40° C.
Early Credit Multiplier	This field will be automatically populated. A value of 2.0, 1.5, or 1.25 will be entered for SD/I engine families certified by Small Volume Manufacturers in model year 2008, 2009, and 2010, respectively. 40 CFR 1045.145(b)(5)	NA
Standard (g/kW-hr)	This field will be automatically populated with the applicable HC+NO <sub>x</sub> or CO standard in g/kW-hr based on the entries for Pollutant, Maximum Power, and Engine Type.	This field will be automatically populated with the applicable evaporative standard in g/m <sup>2</sup> /day: 1.5 if the fuel tank testing was performed at 28° C, or 2.5 if the fuel tank testing was performed at 40° C.
Credit Balance (kg)	This field will reflect the total credit balance (in kilograms) for all engine families by averaging set.	This field will reflect the total credit balance (in kilograms) for all marine vessels.

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Credit Summary for the Part 1045 Marine SI ABT Programs

MODEL YEAR: \_\_\_\_\_  
MANUFACTURER: \_\_\_\_\_

		EXHAUST				EVAPORATIVE
		HC+NO <sub>x</sub> Credits (kg)		CO Credits (kg)		Permeation Emission Credits (kg)
		Outboard and Personal Watercraft (OB/PWC)	Sterndrive/Inboard (SD/I)	Outboard and Personal Watercraft (OB/PWC)***	Sterndrive/Inboard (SD/I)	
<b>Credit Balances before Averaging:</b>						
Current MY	Early Part 1045 Credits		0		0	
	Standard Part 1045 Credits	0	0	0	0	0
	Jet Boat Engine Credits using OB/PWC Credits		0		0	
Banked	Early Part 1045 Credits*					
	Standard Part 1045 Credits					
Traded	Early Part 1045 Credits					
	Standard Part 1045 Credits					
<b>Credits Applied to Current MY Balance:</b>						
Current MY	Apply OB/PWC Credits to Jet Boat SD/I Engines**					
Banked	Apply Early Part 1045 Credits					
	Apply Standard Part 1045 Credits					
Traded	Apply Early Part 1045 Credits					
	Apply Standard Part 1045 Credits					
<b>Credit Balances after Averaging:</b>						
Current MY	Early Part 1045 Credits		0		0	
	Standard Part 1045 Credits	0	0	0	0	0
	Jet Boat SD/I Credits***		0		0	
Banked	Early Part 1045 Credits		0		0	
	Standard Part 1045 Credits	0	0	0	0	0
Traded	Early Part 1045 Credits		0		0	
	Standard Part 1045 Credits	0	0	0	0	0

MESSAGES

<b>SUMMARY:</b>					
Standard Part 1045 Credits	0	0	0	0	0
Banked/ Traded Standard Part 1045 Credits	0	0		0	0
Early Part 1045 Credits		0		0	
Jet Boat SD/I Credits		0		0	

NOTES:

\* Early Part 1045 Banked Credits must be used before the 2013 model year, except for small volume manufacturers who must use them before model year 2014.

\*\* Jet boat engines subject to SD/I standards and using credits from OB/PWC engines must: 1) be certified to an FEL that is at or below the Part 1045 standards for OB/PWC engines; 2) be the same model as an OB/PWC engine model, but have sales less than the equivalent OB/PWC family; and 3) only use credits from the manufacturer's same model year OB/PWC engines.

\*\*\* Jet boat engine credits and CO credits for OB/PWC engine families may not be banked or traded. As such, any credits in these categories that are left unused after averaging, will not carry forward to the following MY.

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