HYDROCARBON PLUS OXIDES OF NITROGEN EXHAUST EMISSION STANDARDS

[Grams per kilowatt-hour]

| Model year | P<4.3 kW $HC+NO_X$ emission standard by model year | P> 4.3 kW $HC+NO_X$ emission standard by model year |
|---|---|---|
| 1998 ... | 276 | $(0.959 \times (151 + 557/P^{0.9})) + 1.22)$ |

(iii) For personal watercraft in model year 1997, a manufacturer may bank positive emission credits if the following conditions are met: the manufacturer certifies their entire marine personal watercraft engine product line for MY 1997 under the emission standards specified in the formula below for PWC, the manufacturer demonstrates compliance with the corporate average standard under §91.207(b), and the sum of positive and negative credits under §91.207 generates positive emission credits, when the following formula is used for purposes of the applicable standard in §91.207(a). The number of credits that may be banked under this paragraph is the number of positive emission credits generated under the provisions of the preceding sentence. Marine engines certified under the provisions of this paragraph are subject to all of the requirements of this part.

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(b) A manufacturer may bank actual credits only after the end of the model year and after EPA has reviewed the manufacturer's end-of-year reports. During the model year and before submittal of the end-of-year report, credits originally designated in the certification process for banking will be considered reserved and may be redesignated for trading or averaging in the end-of-year report and final report.

(c) Credits declared for banking from the previous model year that have not been reviewed by EPA may be used in averaging or trading transactions. However, such credits may be revoked at a later time following EPA review of the end-of-year report or any subsequent audit actions.

### §91.206 Trading.

(a) A marine SI engine manufacturer may exchange emission credits with other marine SI engine manufacturers in trading. These credits must be used in the same averaging set as generated.

(b) Credits for trading can be obtained from credits banked in the three previous model years or credits generated during the model year of the trading transaction. Traded credits expire if they are not used in averaging within three model years following the model year in which they were generated.

(c) Traded credits can be used for averaging, banking, or further trading transactions.

(d) In the event of a negative credit balance resulting from a transaction, both the buyer and the seller are liable, except in cases involving fraud. Certificates of all engine families participating in a negative trade may be voided *ab initio* pursuant to §91.123.

### §91.207 Credit calculation and manufacturer compliance with emission standards.

(a) For each engine family, certification emission credits (positive or negative) are to be calculated according to the following equation and rounded, in accordance with ASTM E29–93a, to the nearest gram. ASTM E29–93a has been incorporated by reference. See §91.6. Consistent units are to be used throughout the equation. The following equation is used to determine hydrocarbon plus oxides of nitrogen credit status for an engine family, whether generating positive credits or negative credits:

$$\sum_{t=1}^{\text{max actual life}} \frac{S(t) \times \text{sales} \times (\text{std} - \text{fel}) \times \text{Power} \times 0.207 \times \mu_{\text{use}}}{1.03^{t}}$$

Where:

sales = the number of eligible sales tracked to the point of first retail sale for the given engine family during the model year. Annual production projections are used to project credit availability for initial certification. Actual sales volume is used in determining actual credits for end of-year compliance determination.

t = time in model years

Power = the average power of an engine family in kW (sales weighted). The power of each configuration is the rated output in kilowatts as determined by SAE J1228. This procedure has been incorporated by reference. See §91.6.

max actual life = maximum actual life specific to the power rating and the application; max actual life = $2\mu_{life}$

$\mu_{life}$ = average actual life in years, specific to the power rating and the application as given below.

| Engine type | $(\mu_{\text{life}})$ |
|---|---|
| Outboard | $41.27 \times \left(\frac{\text{Power}}{0.746}\right)^{-0.204}$ |
| Personal Watercraft | 10 |

Power = as defined above.

$\mu_{use}$ = mean use in hours per year. For outboard engines,

$\mu_{use}$ = 34.8 hrs /yr. For personal watercraft, $\mu_{use}$ = 77.3 hrs/yr;

S(t) = cumulative fraction survived at time t;

$S(t) = \exp -(0.906 \times t/\mu_{life})^4$

STD = the current and applicable marine SI engine emission standard in grams per kilowatt hour as determined in §91.104.

FEL = the family emission limit for the engine family in grams per kilowatt hour.

(b) Manufacturer compliance with the corporate average emission standard is determined on a corporate average basis at the end of each model year. A manufacturer is in compliance when the sum of positive and negative emission credits it holds is greater than or equal to zero, except as allowed under paragraph (c) of this section.

(c)(1) Outboard Engines

(i) For model year 1998, a manufacturer is in compliance when the sum of positive credits and negative emission credits it holds is greater than or equal to zero, including

(A) Credits generated in MY 1998 exceed 70% of the negative credits generated in MY 1998. The remaining negative credits (up to 30% of the total negative credits) must be banked.

(ii) For model year 1999, a manufacturer is in compliance when the positive credits generated in MY 1999 exceed the sum of 80% of the negative credits generated in MY 1999 and the negative credits banked in 1998. The remaining negative credits (up to 20% of the total negative credits) must be banked.

(iii) For model year 2000, a manufacturer is in compliance when the sum of positive and negative emission credits it holds is greater than or equal to zero, including

(A) The negative credits banked in MY 1998 and MY 1999 and

(B) Any adjustments to credits based on adjustments to FELs resulting from requirements in §91.118(h)(1)(i). Manufacturers do not have to recalculate compliance for model years 1998 and 1999.

(2) Personal watercraft engines. (i) For model year 1999, a manufacturer is in compliance when the positive credits generated in MY 1999 exceed 50% of the negative credits generated in MY 1999. The remaining negative credits (up to 50% of the total negative credits) must be banked.

(ii) For model year 2000, a manufacturer is in compliance when the sum of positive and negative emission credits it holds is greater than or equal to zero, including

(A) The negative credits banked in 1999 and

(B) Any adjustments to credits based on adjustments to FELs resulting from requirements in §91.118(h)(1)(i). Manufacturers do not have to recalculate compliance for model year 1999.

(d) When a manufacturer is not in compliance, the manufacturer will be in violation of these regulations and EPA may void *ab initio* the certificates of engine families for which the manufacturer has not obtained sufficient positive emission credits pursuant to § 91.123.

(e) Notwithstanding other provisions of this part, for model years beginning with model year 2000, a manufacturer having a negative credit balance during one period of up to four consecutive model years will not be considered to be in noncompliance in a model year up through and including model year 2009 where:

(1) The manufacturer has a total annual production of engines subject to regulation under this part of 1000 or less; and

(2) The manufacturer has not had a negative credit balance other than in three immediately preceding model years, except as permitted under paragraph (c) of this section; and

(3) The FEL(s) of the family or families produced by the manufacturer are no higher than those of the corresponding family or families in the previous model year, except as allowed by the Administrator; and

(4) The manufacturer submits a plan acceptable to the Administrator for coming into compliance with future model year standards including projected dates for the introduction or increased sales of engine families having FEL(s) below standard and projected dates for discontinuing or reducing sales of engines having FEL(s) above standard; and

(5)(i) The manufacturer has set its FEL using emission testing as prescribed in subpart E of this part; or

(ii) The manufacturer has set its FEL based on the equation and provisions of § 91.118(h)(1)(i) and the manufacturer has submitted appropriate test data and revised its FEL(s) and recalculated its credits pursuant to the provisions of § 91.118(h)(1); or

(iii) The manufacturer has set its FEL using good engineering judgement, pursuant to the provisions of § 91.118(h)(1)(ii) and (h)(2).

[64 FR 15239, Mar. 30, 1999, as amended at 65 FR 24314, Apr. 25, 2000; 70 FR 40451, July 13, 2005]

**§ 91.208 Certification.**

(a) In the application for certification a manufacturer must:

(1) Submit a statement that the engines for which certification is requested will not, to the best of the manufacturer's belief, cause the manufacturer to be in noncompliance under § 91.207(b) when all credits are calculated for all the manufacturer's engine families.

(2) Declare an FEL for each engine family for HC plus $NO_X$. The FEL must have the same number of significant digits as the emission standard.

(3) Indicate the projected number of credits generated/needed for this family; the projected applicable production/sales volume, by quarter; and the values required to calculate credits as given in § 91.207.

(4) Submit calculations in accordance with § 91.207 of projected emission credits (positive or negative) based on quarterly production projections for each family.

(5)(i) If the engine family is projected to have negative emission credits, state specifically the source (manufacturer/engine family or reserved) of the credits necessary to offset the credit deficit according to quarterly projected production.

(ii) If the engine family is projected to generate credits, state specifically (manufacturer/engine family or reserved) where the quarterly projected credits will be applied.

(b) All certificates issued are conditional upon manufacturer compliance with the provisions of this subpart both during and after the model year of production.

(c) Failure to comply with all provisions of this subpart will be considered to be a failure to satisfy the conditions upon which the certificate was issued, and the certificate may be deemed void *ab initio* pursuant to § 91.123.

(d) The manufacturer bears the burden of establishing to the satisfaction of the Administrator that the conditions upon which the certificate was issued were satisfied or waived.

(e) Projected credits based on information supplied in the certification application may be used to obtain a certificate of conformity. However, any such credits may be revoked based on