

**SUPPORTING STATEMENT**

**AIRCRAFT ENGINES — SUPPLEMENTAL INFORMATION RELATED  
TO EXHAUST EMISSIONS**

**RENEWAL**

**OMB Control No. 2060-0680  
EPA ICR No. 2427.03**

**SUPPORTING STATEMENT**  
**AIRCRAFT ENGINES — SUPPLEMENTAL INFORMATION RELATED TO**  
**EXHAUST EMISSIONS (Final Rule)**

**1. IDENTIFICATION OF THE INFORMATION COLLECTION**

**1(a) Title of the Information Collection**

TITLE: “Aircraft Engines – Supplemental Information Related to Exhaust Emissions”

OMB Control Number: 2060-0680

EPA ICR Number: 2427.03

**1(b) Short Characterization/Abstract**

The U.S. Environmental Protection Agency (EPA) is adopting a new set of emission standards for new aircraft engines. The rule requires manufacturers to report production volumes, technical parameters, and emission information in addition to what is already required under the Greenhouse Gas Reporting Rule.

**2. NEED FOR AND USE OF THE COLLECTION**

**2(a) Need/Authority for the Collection**

Clean Air Act section 231 (42 U.S.C. 7571) authorizes EPA to adopt emission standards for aircraft engines. The Clean Air Act additionally provides broad authority for EPA to collect information related to the regulations we adopt for aircraft and other emission sources (42 U.S.C. 7414(a)(1)). EPA is accordingly adopting a new set of emission standards for aircraft gas turbine engines and adding a requirement for manufacturers to submit information related to compliance with the emission standards.

**2(b) Practical Utility/Users of the Data**

EPA will use the data to verify compliance with emission standards and to better understand the characteristics of aircraft engines that are subject to emission standards. This information will be very helpful in future rulemakings as we continue to explore appropriate and achievable emission standards and related requirements for aircraft engines in the context of the international process. This may also be useful in evaluating alternative approaches to specifying the transition to new standards. For example, we may want to specify a certain number of allowable exemptions for a transition period, or allow manufacturers to “earn” an allowance to produce higher-emitting engines for a time with emission credits, offsetting the higher emissions with other engines that have emission levels below what would otherwise be required.

Much of this information is required to develop both present and future emission inventories. The emission inventory methodology includes the following information (1) Engine model or submodel; (2) Mass of hydrocarbons (HC), carbon monoxide (CO), and nitrogen oxides (NOx) by engine model or submodel for each operating mode of the landing and takeoff cycle (LTO) (i.e., take-off, climbout, taxi/ground idle); and (3) Number of LTOs by engine model or submodel operating in the study area (e.g., one or more airports) over the study time period (e.g., annually). Projecting future emission inventories requires information to forecast fleet turnover as older airplanes are retired and new aircraft are added to the fleet. The forecast methodology relies on emission rate information and knowledge of the annual production of each engine model or submodel, and the year in which the engine model or submodel ended production. This information is used in conjunction with information on the activity and the life expectancy of the aircraft/engines (e.g., the life of an aircraft is nominally 25-30 years) to predict fleet turnover.

### **3. NONDUPLICATION, CONSULTATIONS, AND OTHER COLLECTION CRITERIA**

#### **3(a) Non-duplication**

The International Civil Aviation Organization (ICAO) maintains an “emissions databank” with much of the information that is the subject of the new reporting requirement. The ICAO databank is a useful tool for providing a general overview of the aircraft fleet, but it is not updated on a consistent basis, it contains a varying amount of voluntarily reported data from each manufacturer, and it does not specifically include information for every engine sub-model. It also does not contain information on smaller thrust category turbofans or turboprops, and contains no information on engine production volumes. In addition, we tried recently to use the emissions databank to conduct analyses in support of policy development, but were not able to get reliable information in certain key areas.

We need this information on engine technology and performance parameters and emissions data to conduct accurate technology assessments and aircraft emission inventories and develop appropriate policy; therefore, the emissions databank is not the proper tool to inform our policy decisions, including future standard-setting actions. Furthermore, while the situation is unique here, in the context of the roles of EPA and FAA with regard to aircraft engine emission standards, it is consistent with EPA policy and practice to ask for timely and reasonable reporting of emission certification testing and other information that is relevant to our emission standards.

Some, but not all, of the information we are requesting is submitted to FAA during the engine type certificate process. EPA explored using the information obtained by FAA in lieu of a separate report, but concerns related to sharing confidential business information limited EPA’s ability to use this information. Additionally, manufacturer’s submissions to FAA do not consistently include all the information that is sought by EPA in this ICR. Thus, it is not adequate for us to rely on information from FAA to carry out our responsibilities to perform inventory modeling and policy development.

### **3(b) Public Notice Required Prior to Information Collection Request (ICR) Submissions to OMB**

In compliance with the Paperwork Reduction Act (44 USC 3501 *et seq.*), EPA sought comment via an Federal Register Notice. No comments were received.

### **3(c) Consultations**

In developing the final rule, EPA met with many of the manufacturers that will need to submit information under the new requirements. Discussions included the extent, form, and timing of the information submissions. There have been non changes since then.

### **3(d) Effects of Less Frequent Collection**

We require annual reporting. This is consistent with the current requirement to submit aircraft engine-related CO<sub>2</sub> and NOx information for the greenhouse gas reporting requirement (see 40 CFR 87.64). Much of the technical information will not change from year to year; we expect that the new information will often be limited to the production volumes for the preceding year. Having the information updated as needed every year will be most helpful for assessing technology trends and impacts and in a broader sense confirming in a timely way that manufacturers are properly complying with regulatory requirements. It will also help us to stay abreast of any developments in the characteristics of the aircraft engine industry.

### **3(e) General Guidelines**

This collection of information is consistent with all OMB guidelines under 5 CFR 1320.6. Information may be submitted in a variety of electronic and hard copy formats, which provides flexibility for facilities to use a system that meets their needs and is consistent with current practices, thereby minimizing the recordkeeping burden.

### **3(f) Confidentiality**

In general, emission data and related technical information collected under CAA sections 114 and 208 cannot be declared confidential business information (CBI). We will, however, generally consider manufacturers' production volumes to be CBI and will accordingly protect this information in accordance with 40 CFR part 2. Although CBI determinations are usually made on a case-by-case basis, EPA has issued guidance on what constitutes emission data that cannot be considered CBI (56 FR 7042, February 21, 1991).

### **3(g) Sensitive Questions**

This information collection does not ask any questions concerning sexual behavior or attitudes, religious beliefs, or other matters usually considered private.

## **4. THE RESPONDENTS AND THE INFORMATION REQUESTED**

The respondents in this information collection include manufacturers of aircraft gas turbine engines.

### **4(a) Respondents/North American Industrial Classification Systems (NAICS) Codes**

All of the expected respondents are manufacturers of new aircraft engines, which are represented by NAICS Code 336412.

### **4(b) Information Requested**

#### *Reporting Requirements*

We require the 14 reporting elements listed below as applicable for each affected gas turbine engine sub-model as a key tool for informing public policy assessments. We also require engine manufacturers to combine the reporting elements with the report on CO<sub>2</sub> and NOx emissions that is already required under 40 CFR 87.64 for reporting greenhouse gas (GHG) emissions. We have identified the GHG reporting elements in the list below to illustrate the scope of the combined reports that will constitute EPA's database. Upon examination, one can see that some of the information requested for the combined report is already provided in the current GHG report.

- Company corporate name as listed on the engine type certificate (GHG);
- Calendar year for which reporting (GHG);
- Complete sub-model name (This will generally include the model name and the sub-model identifier, but may also include an engine type certificate family identifier.) (GHG);
- The type certificate number, as issued by the FAA (Specify if the sub-model also has a type certificate issued by a certificating authority other than the FAA) (GHG);
- Date of issue of type certificate and / or exemption, i.e. month and year (GHG);
- Emission standards to which the engine is certified, i.e. Annex 16, Volume II, edition number and publication date;
- If this is a derivative engine, identify the original certified engine model;
- Engine sub-model that received the original type certificate for the engine type certificate family;
- Production volume of the sub-model for the previous calendar year, or if zero, state that the engine model is not in production and list the date of manufacture (month and year) of the last engine produced;
- Regarding the above production volume report, specify (if known) the number of engines that are intended for use on new aircraft and the number intended for use as certified (non-exempt) spare engines on in-use aircraft;
- Reference pressure ratio (GHG);
- Combustor description (type of combustor where more than one type available on an engine);

- Engine maximum rated thrust output, in kilonewtons (kN) ) or watts (W) (depending on engine type) (GHG);
- Unburned hydrocarbon (HC) mass (g) total (weighted) and over each segment of the Landing and Take-off Cycle (LTO), i.e. Take-off, Climb, Approach, Taxi / Ground Idle;<sup>1</sup>
- Unburned hydrocarbon characteristic level (i.e. mass of hydrocarbons over LTO cycle / Rated Thrust (Dp/Foo);<sup>2</sup>
- Carbon monoxide (CO) mass (g) total (weighted) and over each segment of the entire Landing and Take-off Cycle (LTO) (i.e. Take-off, Climb, Approach, Taxi / Ground Idle);
- Carbon monoxide (CO) characteristic level (i.e. mass of CO over LTO cycle / Rated Thrust (Dp/Foo)) ;
- Nitrogen oxides (NOx) mass (g) total (weighted) and over each segment of the entire Landing and Take-off Cycle (LTO) (i.e. Take-off, Climb, Approach, Taxi / Ground Idle);
- Nitrogen oxides (NOx) characteristic level (i.e. mass of NOx over LTO cycle / Rated Thrust (Dp/Foo)).
- Smoke number total and over each segment of the entire Landing and Take-off Cycle (LTO) (i.e. Take-off, Climb, Approach, Taxi / Ground Idle);
- Smoke number characteristic level;
- Carbon dioxide (CO<sub>2</sub>) mass (g) total (weighted) and over each segment of the entire Landing and Take-off Cycle (LTO), i.e. Take-off, Climb, Approach, Taxi / Ground Idle (GHG);
- Number of emission tests run per sub-model (GHG) ;
- Number of engines tested per sub-model(GHG) ;
- Fuel flow (grams / second) total (weighted) and over each segment of the Landing and Take-off Cycle (LTO) (i.e. Take-off, Climb, Approach, Taxi / Ground Idle); and
- Any additional remarks to the EPA.

The annual report must be submitted for each calendar year in which a manufacturer produces any affected gas turbine engine. These reports are due to EPA by February 28 of each year, starting in 2014 for the 2013 calendar year. Where information provided for any previous year remains valid and complete, manufacturers may report production figures and state that there are no changes instead of resubmitting the original information. To facilitate and standardize reporting, we expect to specify a particular format for this reporting in the form of a spreadsheet or database template that we provide to each manufacturer. Note that this annual report does not affect the existing regulatory requirements in § 87.64 to report CO<sub>2</sub> and NOx emission data for purposes of greenhouse gas reporting. Additionally, both the greenhouse gas reporting and this reporting will be incorporated into one submission in order to minimize the reporting burden to the manufacturer, as previously discussed.

#### *Recordkeeping Requirements*

Manufacturers need not keep records other than copies of the information submitted to EPA. They must keep these records for at least three years.

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<sup>1</sup> See Regulation Part 87-*Control of Air Pollution from Aircraft and Aircraft Engines, Subpart E, §87.42 Certification report to EPA* for definitions.

<sup>2</sup> Dp/Foo : total gross emission of each gaseous pollutant (mass) / rated thrust (g/kN).

## **5. THE INFORMATION COLLECTED – AGENCY ACTIVITIES, COLLECTION METHODS, AND INFORMATION MANAGEMENT**

### **5(a) Agency Activities**

EPA activities associated with the rule include creating a reporting template and answering manufacturers' questions about how to complete the form. Once the reporting program is in place, EPA activities will include monitoring and verification of emission reports, further communication and outreach, and program evaluation.

### **5(b) Collection Methodology and Management**

We generally expect manufacturers to submit data electronically. We will maintain records of these files and plan to post non-CBI data on our website.

### **5(c) Small Entity Flexibility**

One manufacturer, Williams International, is a small business under the criteria established by the Small Business Administration. The information collection involves a minimal amount of additional effort, so we did not adopt any provisions to reduce the burden of sending or keeping this information.

### **5(d) Collection Schedule**

We require annual reporting. This is consistent with the current requirement to submit aircraft engine-related greenhouse gas data under 40 CFR 87.64. Much of the information will not change from year to year; we expect that the new information will often be limited to production volumes for the preceding year. Having the information updated every year will be most helpful for assessing technology trends and impacts and in a broader sense confirming, in a timely way, that manufacturers are properly complying with regulatory requirements. It will also help us to stay abreast of any developments in the characteristics of the aircraft engine industry.

## **6. ESTIMATING THE BURDEN AND COST OF THE COLLECTION**

This section presents EPA's estimates of the burden and costs to respondents associated with the activities described in Section 4 as well as the Federal burden hours and costs associated with the activities described in Section 5(a). EPA estimates that, over the three years covered by this request, the total respondent burden associated with this reporting will average 60 hours per year and the cost to all respondents of the information collection will average \$3646 per year.

Section 6(a) of this ICR provides estimates of burden hours for all respondent types. Section 6(b) contains estimates of respondent costs for the information collection. Section 6(c) summarizes Federal burden and costs. Section 6(d) describes the respondent universe and the total burden and cost of this collection to respondents. Section 6(e) presents the bottom line burden and cost. The burden statement for this information collection is in Section 6(f).

## **6(a) Estimating Respondent Burden**

EPA estimates that the total annual burden to all affected entities will be 6 hours per year over the three years covered by this information collection. EPA estimates that 10 respondents will submit a report each year.

## **6(b) Estimating Respondent Costs**

Costs to respondents associated with this information collection include labor costs (i.e., the cost of labor by manufacturers to meet the new information collection requirements). Because the requirements merely supplement existing activities, we believe manufacturers will incur no non-labor costs (e.g., the cost of purchasing and installing equipment or contractor costs associated with providing the required information).

To calculate labor costs, EPA estimated technical, managerial, clerical, and legal loaded labor rates for each industry sector using labor rates from the Bureau of Labor Statistics<sup>3</sup> and applying a 60% loading factor.<sup>4</sup> The labor rates are: \$71.03 for managers; \$55.20 for Engineers/technicians; \$29.65 for clerical staff, and \$101.00 for legal staff.

EPA estimates that the annual cost to each engine manufacturer will average 6 hours and \$365 over the three years covered by this information collection. This is based on an estimated effort involving 1 hour for managers, 1.5 hours for engineers, 2 hours for clerical staff, and 1.5 hours for attorneys. Manufacturers are already required to submit similar information annually, so we expect that submitting and keeping the additional records will involve no capital costs and no O&M costs.

## **6(c) Estimating Agency Burden and Cost**

This section describes the burden and cost to the Federal government associated with this information collection. Federal activities under this information collection include EPA oversight of the reporting program.

### *EPA burden and cost*

EPA activities associated with the collection include oversight and implementation of the reporting program, e.g., monitoring and verification of emission reports, communication and outreach, and program evaluation. EPA estimates that this will involve up to 10 staff hours per year for these activities.

To develop EPA labor costs, EPA estimates the average hourly labor rate for salary and overhead and benefits for Agency staff to be \$50.14. To derive this figure, EPA multiplied the

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<sup>3</sup> These rates reflect adjustments of the manufacturing sector's average productivity increase of 3.7% per year for 6 quarters between 2006 Q2 and 2007 Q4, based on the estimate released by the Bureau of Labor Statistics in March 2008.

<sup>4</sup> The ICR Handbook (November 2005) recommends using a multiplier of 1.6 to account for benefits and overhead related to government wages; this is considered a conservative estimate (potentially high) for the private sector.

hourly compensation at GS-12, Step 5 on the 2010 General Schedule pay scale (\$32.73) by the standard government benefits multiplication factor of 1.6 to account for overhead and benefits.

#### **6(d) Estimating the Respondent Universe and Total Burden and Costs**

We expect to receive annual reports from 10 manufacturers.

#### **6(e) Bottom Line Burden Hours and Costs**

The estimated bottom line burden hours and costs are 60 hours per year and \$3,646 per year.

#### **6(f) Change in Burden Estimates**

There has been no change in the requirements or respondents in the past three years; therefore, the burden estimates remain unchanged.

#### **6(g) Burden Statement**

The annual public reporting and recordkeeping burden for this collection of information is estimated to average 6 hours per response. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this ICR under Docket ID Number EPA-HQ-OAR-2010-0687, which is available for online viewing at [www.regulations.gov](http://www.regulations.gov), or in person viewing at the Air and Radiation Docket in the EPA Docket Center (EPA/DC), EPA West, Room 3334, 1301 Constitution Avenue, NW, Washington, D.C. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Air and Radiation Docket is (202) 566-1742. An electronic version of the public docket is available at [www.regulations.gov](http://www.regulations.gov). This site can be used to submit or view public comments, access the index listing of the contents of the public docket, and to access those documents in the public docket that are available electronically.

When in the system, select “search,” then key in the Docket ID Number identified above. Also, you can send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, D.C. 20503, Attention: Desk Officer for EPA. Please include the EPA Docket ID Number EPA-HQ-OAR-2010-0687 and OMB Control Number 2060-0680 in any correspondence.