

EPA Greenhouse Gas Mandatory Reporting Rule Template
for Aircraft Manufacturers

Office of Transportation and Air Quality
January 2016

	Company corporate name as listed on the engine type certificate	Applicable calendar year	Complete sub-model name	Engine type (turbofan, turboprop, etc.)	FAA type certificate number	Certificating authority of original type certificate	Date of issue of type certificate, (mm-yyyy)	Name of engine sub-model which received original type certificate	Derivative engine for emission certification purposes? (Y/N)	If derivative, name of original certificated engine model	Combustor type	Number of tests run per sub-model
	Column is CBI (Y/N)											
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	Number of engines tested per sub-model	Applicable tier of NOx standards	Reference pressure ratio	Engine maximum rated thrust output, in kilonewtons (kN) - kilowatts (kW) for turboprop engines	Calendar year production volumes				Nitrogen Oxides (NOx)				
					Intended for new aircraft		Non-exempt spare engines intended for in-use aircraft	Excepted Spare Engines	Emissions Index over each segment of the entire LTO Cycle (g/kg)				Total LTO mass (g)
					Compliant	Exempted			Take-off	Climbout	Approach	Ground idle / taxi	
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	Hydrocarbons (HC)							Carbon Monoxide (CO)					Smoke Number over each segment of the		
	Emissions Index over each segment of the entire LTO Cycle (g/kg)				Total LTO mass (g)	Characteristic level (Dp/Foo)	Emissions Index over each segment of the entire LTO Cycle (g/kg)				Total LTO mass (g)	Characteristic level (Dp/Foo)	Take-off	Climbout	Approach
	Take-off	Climbout	Approach	Ground idle / taxi			Take-off	Climbout	Approach	Ground idle / taxi					
1															
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Smoke		Fuel flow						Carbon dioxide (CO ₂)					
entire LTO Cycle		Maximum	Characteristic level	Over each segment of the Landing and Take-off (LTO) Cycle (g / sec)				Total fuel flow over LTO (g)	Mass over each segment of the entire Landing and Take-off (LTO) Cycle (g)				
Ground idle / taxi	Take-off			Climbout	Approach	Ground idle / taxi	Take-off		Climbout	Approach	Ground idle / taxi	Total LTO mass (g)	
1								-	-	-	-	-	-
2								-	-	-	-	-	-
3								-	-	-	-	-	-
4								-	-	-	-	-	-
5								-	-	-	-	-	-
6								-	-	-	-	-	-
7								-	-	-	-	-	-
8								-	-	-	-	-	-
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14								-	-	-	-	-	-
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17								-	-	-	-	-	-
18								-	-	-	-	-	-
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Smoke		Fuel flow						Carbon dioxide (CO ₂)					
entire LTO Cycle		Maximum	Characteristic level	Over each segment of the Landing and Take-off (LTO) Cycle (g / sec)				Total fuel flow over LTO (g)	Mass over each segment of the entire Landing and Take-off (LTO) Cycle (g)				
Ground idle / taxi	Take-off			Climbout	Approach	Ground idle / taxi	Take-off		Climbout	Approach	Ground idle / taxi	Total LTO mass (g)	
20								-	-	-	-	-	-
21								-	-	-	-	-	-
22								-	-	-	-	-	-
23								-	-	-	-	-	-
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34								-	-	-	-	-	-
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	Any additional remarks to the EPA
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OMB Control Number: 2060-0680, Expiration Date: 12/31/21

Row 4 Please mark each column YES or NO to designate whether it contains any confidential business information as such, but only mark that which is truly confidential. Most of the fields will NOT be confidential.

For further information on these reporting requirements, see 40 CFR parts 87.42 and 87.64.

Questions regarding these requirements can be submitted via email to aircraft_engine_reporting@epa.gov.

Guidance on specific columns:

- Column C:** This is the calendar year for which production is being reported.
- Column E:** If engine is turbofan, please indicate if it is mixed flow or not.
- Column G:** This is the certifying authority that issued the original certificate for the engine type (e.g., FAA, EASA, TC)
- Column H:** This is the date of issuance of the original type certificate for that submodel, not the most recent revision date of the type certificate. Original dates for all submodels are contained in the most recent revision of the type certificate.
- Columns R, S, T, and U:** For purposes of calendar year production, an engine is considered to have been produced on the date shown on its FAA Form 8130-3, "AIRWORTHINESS APPROVAL TAG" or the date shown on the engine identification plate per 14 CFR 45.13(a)(7).
If a given engine submodel is manufactured by more than one manufacturer or at more than one facility, you may submit the total production of that submodel in a single report.
If there are no sales of a particular submodel, please enter "0" rather than leaving blank.
- Columns V through AM:** Reporting of NOx, HC and CO is not required for engines only subject to a smoke standard.
- Columns AX-BC, BQ-BV and CG-CL:** These columns each contain formulas which will calculate the value based on the inputs of their respective preceding columns. They are shaded light grey.
- Column AR:** For smoke number, please provide an explanation in the notes column if this value is different than the maximum of the four LTO points.
- Column AY-BC:** Carbon dioxide is automatically calculated: $CO_2 = fuel_flow * time_in_mode * 3.16$
- Column BE through CL** Reporting of nvPM is only required for engines with rated thrust greater than 26.7 kilonewtons
- Column BQ-BV & CG-CL** nvPM emission rates are calculated:
 $nvPM_corrected = measured_nvPM * nvPM_loss_correction_factor * fuel_flow * time_in_mode$

Additional guidance:

Significant Figures: Please report values consistent with the significant figure requirements contained in 14 CFR 34.23.

Reporting of emission indices at individual LTO operating thrust mode settings are optional, but recommended, for NOx, HC, CO and Smoke.

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Version	Change Date	Sheet	Changed
v4	8/27/2021	Change Log	
		Reporting Requirements	Col. S
		Reporting Requirements	Col. V-Y
		Reporting Requirements	Col. Z
		Reporting Requirements	Col. AB-AE
		Reporting Requirements	Col. AF
		Reporting Requirements	Col. AH-AK
		Reporting Requirements	Col. AL
		Notes	Col. A
		Notes	A26

What changed

Added change log sheet

Column S added to specify the number of exempted engines to be installed on new airplanes.

NO_x changed from mass of emissions (g) to emissions Index (g/kg of fuel)

Removed equation to calc total mass

CO changed from mass of emissions (g) to emissions Index (g/kg of fuel)

Removed equation to calc total mass

HC changed from mass of emissions (g) to emissions Index (g/kg of fuel)

Removed equation to calc total mass

Updated col. Ref to reflect addition of new col S.

Remove ref. to Col. Z, AF, and AL because equations are removed