
EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
 INTERNATIONAL AVIATION (CORSA)

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**EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
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CHAPTER 1: ADMINISTRATION PROCEDURES**

17.1.1. Introduction

a. This E-book defines airplane operators' responsibilities for implementing ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) in the Kingdom of Saudi Arabia. Airplane operators are required to measure their fuel use from international flights. This data is then used to compute CO₂ emissions, which is to be reported to GACA, beginning from a 2019-2020 baseline period (Appendix A). Emissions in excess of internationally agreed targets must be offset via cancellation of emissions credits or other emission reduction schemes.

b. The procedures specified in this chapter summarize administrative roles and responsibilities of the stakeholders involved in implementing GACAR Part 157.

17.1.2. Applicability

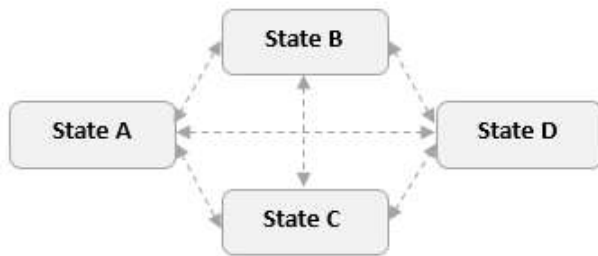
a. The scope of the requirements in GACAR Part 157 is applicable to an airplane operator that produces annual CO₂ emissions greater than 10,000 tons from the use of an airplane(s) with a maximum certificated take-off mass greater than 5,700 kg conducting international flights, with the exception of domestic, humanitarian, medical and firefighting flights.

b. There are also specific aircraft categories that do not fall within the scope in addition to specific requirements associated with new entrant airplane operators. Additionally, flights taking-off from or landing at an aerodrome of a State, or one of its territories that is not an ICAO Member State, are not within the applicability scope of GACAR Part 157.

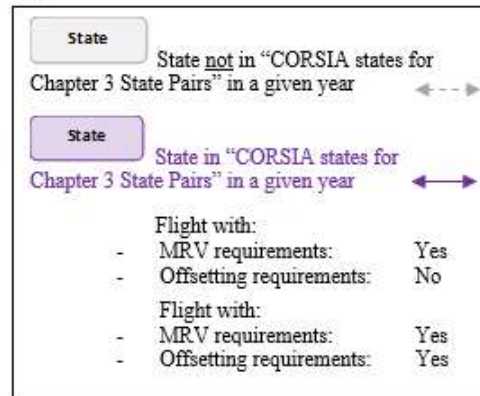
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17.1.2.1. Scope of applicability for offsetting requirements

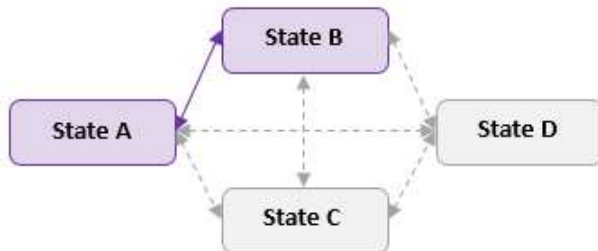
2019-2020 period:



Legend:



2021-2035 compliance periods (scenario 1):



2021-2035 compliance periods (scenario 2):

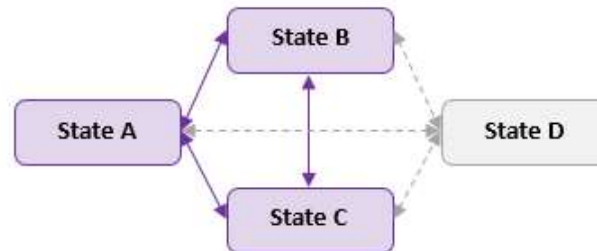


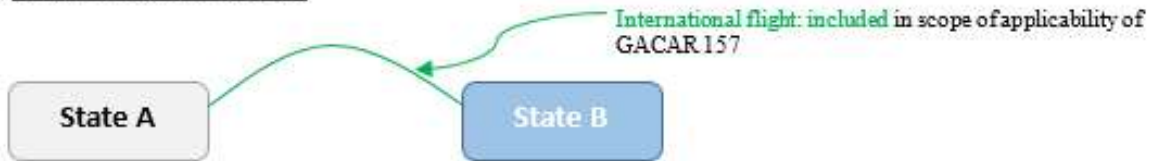
Figure 1-1. Illustration of MRV and offsetting requirements

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17.1.2.2. International flights

a. For the purpose of GACAR Part 157, an international flight is defined as the operation of an aircraft from take-off at an aerodrome of a State or its territories, and landing at an aerodrome of another State or its territories.

Flights between States:



Flights within States:



Flights to or from territories:



Figure 1-2. International flights as defined in GACAR Part 157

b. International flights are defined regardless of the State of registration of the airplane conducting the flight, or the State to which the airplane operator has been attributed.

When considering whether a flight is international or domestic, an airplane operator and GACA must use Doc 7910 — Location Indicators, which contains a list of aerodromes and the State or overseas territory to which they are attributed. In case an aerodrome is not listed in Doc 7910, the State in which the aerodrome is located should be determined on the basis of a similar location indicator (e.g., NZ% for New Zealand), or by identifying the overseas territory in which it is located and the State to which the overseas territory is attributed to in Doc 7910. If an aerodrome is not listed in Doc 7910, then the airplane operator is required

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to inform GACA.

17.1.2.3. Airplane with a maximum certificated take-off mass of greater than 5,700 kg

- a. The “maximum certificated take-off mass” is defined as “the maximum permissible take-off mass of the airplane according to the certificate of airworthiness, the flight manual or other official documents”.
- b. The maximum certificated take-off mass is a limitation associated with an individual airplane serial number.

17.1.2.4. Airplane operator with annual CO₂ emissions greater than 10,000 tons

- a. An airplane operator must assess whether its annual CO₂ emissions from international flights are above the threshold of 10,000 tons. If above this threshold, then the airplane operator must engage with GACA.

17.1.2.5. Airplane flight categories not within the scope of the MRV requirements

- a. The following airplane flight categories are not considered to be within the scope of GACAR Part 157.
 - i. Domestic flights:
 - a. Flights within a State, or between a State and one of its territories, or between the territories of a State, are considered as domestic
 - ii. Military and State airplane flights:
 - a. GACAR part 157 does not apply to military operations, or State airplanes including (customs and police services), or specific flights carrying official government representatives.
 - b. The airplane operator must provide evidence to GACA to prove that an operation was a military or State airplane flight.
 - (1) If Item 8 (flight rules and type of flight) of the flight plan is marked “M”, then it is considered to be a military flight according to Doc 4444 — Procedures for Air Navigation Services — Air Traffic Management.
 - (2) If Item 18 (other information) of the flight plan is marked “STS/STATE”, then it

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is considered a flight engaged in military, customs or police services according to Doc 4444.

(3) If Item 18 (other information) of the flight plan is marked “STS/HEAD”, then it is considered a flight with Head of State status according to Doc 4444.

(4) If a flight was operated solely for a military purpose, consistent with the State’s condition(s) for demonstrating the military purpose, then the flight is considered a military flight.

iii. Humanitarian, medical and firefighting flights

a. The airplane operator should provide evidence to GACA to prove that a flight was a humanitarian, medical or firefighting flight according to Doc 4444. For example,

b. if Item 18 (other information) of the flight plan should be marked:

(1) “STS/HUM” then it should be considered a humanitarian flight;

(2) “STS/HOSP” then it should be considered a medical flight declared by medical authorities;

(3) “STS/MEDEVAC” then it should be considered a life critical medical emergency evacuation flight; or

(4) “STS/FFR” then it should be considered a firefighting flight.

c. One or more flights preceding or following a humanitarian, medical or firefighting flight may be exempted under the above conditions as long as such preceding or following flight(s) have been operated with the same airplane and it can be proven that such flight(s) were part of the related humanitarian, medical or firefighting operation.

17.1.2.6. Attribution

a. If the airplane operator changes its ICAO Designator, AOC (or equivalent) or place of juridical registration, and is subsequently attributed to a new State, but it is not establishing a new entity or a subsidiary, then this State must become the State to which the airplane operator fulfills its requirements under this E-Book at the start of the next compliance period.

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17.1.2.7. GACA Administrative Responsibilities

- a. GACA will approve the airplane operator compliance on the basis of satisfactory evidence that the airplane operator meets requirements that are at least equal to those in GACAR 157.
- b. GACA will evaluate KSA airplane operators that have not been identified as subject to GACAR 157 to ensure that all airplane operators for whom the regulation is likely to be applicable according to GACAR 157, §157.3(a). Use GACA data on international operations by non-CORSIA airplane operators as inputs to the ICAO CERT model to compute emissions. Those airplane operators with emissions near 10,000 tons should be investigated further.
- c. GACA will not delegate enforcement of the requirements of GACAR 157, or their administrative tasks towards ICAO, to another State. GACA may delegate administration processes of GACAR 157 to another State through an administrative partnership based on bilateral agreement among the respective States.
- d. The State providing capacity support through an administrative partnership must notify ICAO about the contracting administrating authorities, affected airplane operators, scope and duration of the administrative partnership and a copy of the bilateral agreement. Chapter 9 of this E Book provides an example bilateral agreement that can be used as the basis for an administrative partnership.
- e. The State providing capacity support via an administrative partnership should assess whether the administrating authority that has been delegated authority, which will provide administering tasks for another State, has the required resources to offer such services.
- f. GACA will ensure that airplane operators attributed to it are advised of the administrative arrangements prior to start of the administrative partnership and any potential changes thereafter.
- g. Neither State will withdraw from an administrative partnership before completion of the reporting activities at the end of the reporting period, but it may withdraw from an administrative partnership according to the notice period defined in the agreement.
- h. GACA will submit to ICAO a list of verification bodies accredited in the State according to the requirements and in accordance with the timeline as defined in Table A-1 above. GACA may submit updates to this list to ICAO on a more frequent basis.

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17.1.3 New entrants

- a. A new entrant is an airplane operator that exceeds 10,000 tons for the first time in a given year.
- b. A "new entrant", which states that an airplane operator can be treated as a new entrant if its "activity is not in whole or in part a continuation of an aviation activity previously performed by another airplane operator".
- c. "New entrant" does not include an airplane operator whose activity in whole or in part is a continuation of an aviation activity previously performed by another airplane operator.
- d. The following conditions should be checked to determine whether an activity of a potential new entrant airplane operator would be deemed the continuation of an activity previously performed by another airplane operator, where activity is understood to mean the operation of one or more flights on a specific State pair as identified by the departing and arriving aerodrome pairs:
- (1) The activity has been operated by the potential new entrant in the 12 months starting from the month in which its CO₂ emissions has exceeded 10,000 tons, and has also been performed by one or several other airplane operator(s) during the same 12 months or during the 6 preceding months, irrespective of whether any such airplane operator was subject to CORSIA or not;
 - (2) The activity was operated by another airplane operator that had a business relationship with the potential new entrant, such as being in a parent-subsidiary relationship or part of a common holding; or the activity was operated by another airplane operator that in such timeframe was subject of a financial operation by the potential new entrant, such as a partial or complete acquisition or merger including the case of bankruptcy of the previous airplane operator.
- e. A new entrant (airplane operator) is exempted from CORSIA offsetting requirements for the first 3 years or until its annual emissions exceed 0.1% of total 2020 CO₂ emissions from international flights, whichever comes first.
- (1) Example: Operators A and B start operations in year 2022 as shown in the table below. According to the paragraph above, Operator A will have offsetting requirements in 2025, and Operator B in 2024.

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Operator	Emissions (% of total emissions in 2020)			
A	0.02	0.04	0.06	0.08
B	0.06	0.11	0.16	0.21

Table 1-1: New Entrant Emissions CORSIA Participation Example

f. For illustration, the below timeline would apply to an airplane operator that exceeds the annual CO₂ emissions threshold of 10,000 tons in 2026 and is considered a new entrant in accordance with guidance as described in section 1 of this E-book157-01:

- (1) The exemption period for the new entrant begins from 1 January 2026;
- (2) New entrant may monitor its CO₂ emissions in 2026;
- (3) It will monitor, verify and report its CO₂ emissions in 2027 and 2028;
- (4) The first year for which the airplane operator is subject to offsetting requirements is 2029 (full calendar year);
- (5) If in 2027 the new entrant exceeds the exemption threshold of 0.1 per cent of total CO₂ emissions from international flights in 2020, the first calendar year for which the airplane operator is subject to offsetting requirements is 2028.

g. An airplane operator will be entitled to the provisions applicable to new entrants under GACAR 157 in any of the years of their applicability if, the following conditions are met in such year:

- (1) The airplane operator has not been within the scope of applicability of GACAR Part 157 in each year from 2019 until the year preceding the entry year; or
- (2) None of the activities performed by the airplane operator are determined to be the continuation of activities previously performed by another airplane operator.

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17.1.4. Technical and operation standard for GACAR 157

a. The airplane operator must comply by submitting the following forms in a format and manner approved by the President:

(1) Airplane Operator Information within a month of meeting applicability requirements of GACAR 157:

i. The Airplane Operator Information Form includes airplane operator name, attribution method and type of identifier, operator address and operator focal point and their contact information.

Attribution Method	Identifier	Address	Province	City	Postal Code	Name of focal point	Tel of Focal Point	Email of focal point

Table 1-2. Airplane Operators Attributed to Saudi Arabia

i. The form is due within a month of qualifying for CORSIA.

ii. The airplane operator must also inform GACA of changes to the form.

(2) Emissions Monitoring Plan within 2 month of meeting applicability requirements of GACAR 157:

i. The Emissions Monitoring Plan Form is due within 3 months of meeting applicability requirements of GACAR 157.

ii. See Appendix C b. of this E-book below for details.

(3) Emissions Report annually on 31st of May:

i. The Emissions Report Form is due annually by 31st of May.

ii. See Appendix D III b. of E-book below for details.

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(4) Emissions Unit Cancellation Report annually on 30 April 2025

- i. The Emissions Unit Cancellation Report is due annually by 30 April 2025.
- ii. See Section 8.2 of this E-Book of E-book below for details.

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CHAPTER 2: GUIDELINES ON MONITORING, REPORTING AND VERIFICATION

17.2.1 Applicability of MRV

- a. This E-book is applicable to an airplane operator that produces annual CO₂ emissions greater than 10,000 tons from the use of an airplane(s) with a maximum certificated take-off mass greater than 5,700 kg conducting international flights on or after 1 January 2019, with the exception of humanitarian, medical and firefighting flights.
- b. This E-book is not applicable to international flights preceding or following a humanitarian, medical or firefighting flight provided such flights were conducted with the same airplane and were required to accomplish the related humanitarian, medical or firefighting activities or to reposition thereafter the airplane for its next activity. The airplane operator must provide supporting evidence of such activities to the verification body or, upon request, to GACA.
- c. This E-book is applicable to a new entrant airplane operator from the year after it meets the requirements.

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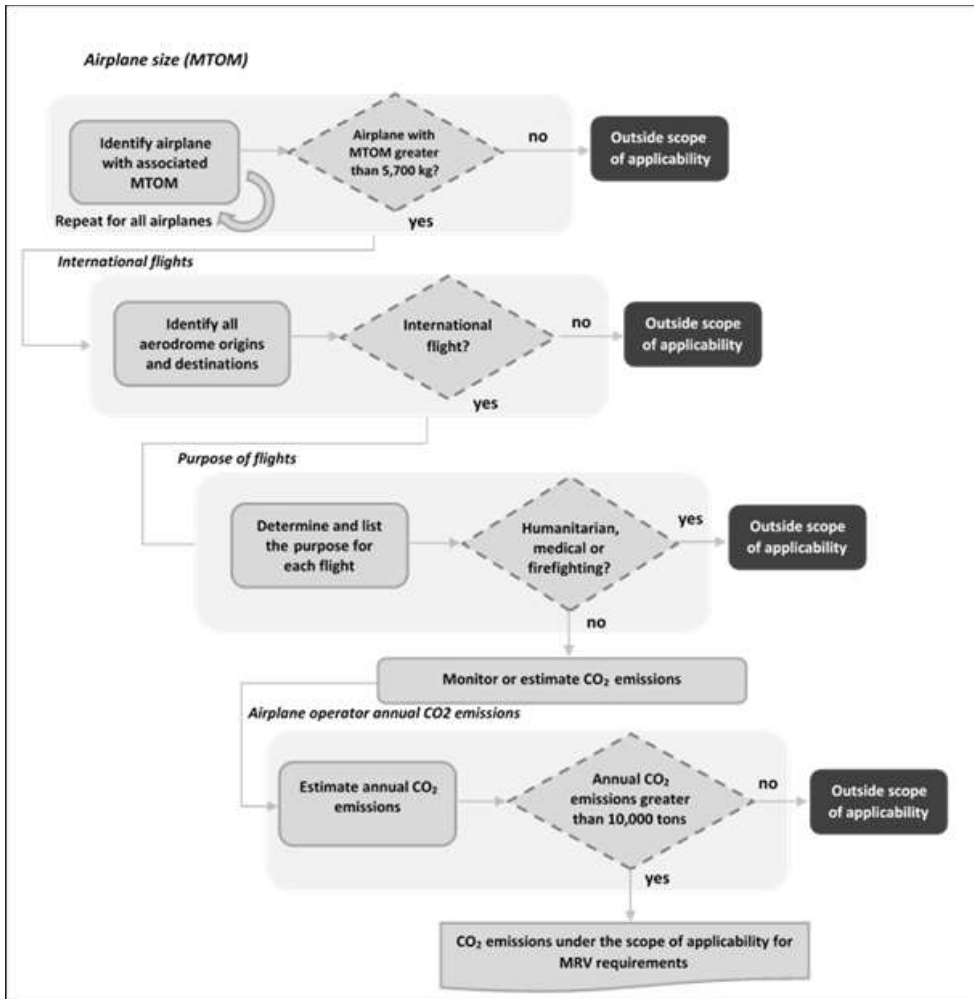


Figure 2-1: Applicability of the MRV requirements to international flights

17.2.1 Monitoring

a. The procedures specified in this E- Book are concerned with monitoring fuel use by airplane operators. Fuel use is the basis upon which CO₂ emissions are determined. The methods proposed are representative of the most accurate established practices for determining fuel use. Any equivalent procedures to those contained in this E-Book must only be allowed after prior application to and approval by the President.

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17.2.2.1 Eligibility of Fuel Use Monitoring Methods

i.2019-2020 period

- a. An airplane operator should estimate during 2018 its annual CO₂ emissions from international flights to determine its eligibility for using Fuel Use Monitoring Methods during the 2019-2020 period, in accordance with GACAR part 157, Subpart C, 157.23 (a)(1).
- b. This will form part of its initial Emissions Monitoring Plan which is to be submitted by the airplane operator to GACA.
- c. If the airplane operator's Emissions Monitoring Plan is determined to be incomplete and/or inconsistent with an eligible Fuel Use Monitoring Method, GACA will approve a different eligible Fuel Use Monitoring Method within the Emissions Monitoring Plan.
- d. In accordance with GACAR part 157, Subpart C, 157.23 (a)(1), an airplane operator with estimated annual CO₂ emissions from international flights greater than or equal to the threshold of 500,000 tons in the 2019-2020 period is to use a Fuel Use Monitoring Method as described in Appendix B. If an airplane operator already uses a Fuel Use Monitoring Method, then this could be used to calculate its annual CO₂ emissions within the scope of applicability of GACAR part 157, Subpart C, and thus determine its eligibility for using Fuel Use Monitoring Methods.
- f. If the airplane operator estimated annual CO₂ emissions from international flights is less than 500,000 tons, then it may elect to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) as described in Appendix B. The airplane operator will demonstrate its eligibility by estimating its annual CO₂ emissions from international flights for the year 2019, based on data from the 2017-2018 period.
- g. If the airplane operator's annual CO₂ emissions from international flights increases above the threshold of 500,000 tons in 2019, the airplane operator must request approval from the President to continue to use the monitoring method chosen during 2020.
- h. A full continuous 12 months of data within the 2017-2018 period can be seen as a reasonable proxy for an estimate of 2019 CO₂ emissions. However, if the airplane operator does not have a full year of data, or expects that its traffic and emissions will change significantly in 2019, it should take that into account.
- i. In the absence of monitored and reported fuel use and/or CO₂ emissions between 1 July 2017 and 30 June 2018, the airplane operator could use the following processes to estimate its annual CO₂ emissions within the scope of applicability of GACAR part 157, Subpart C, and thus determine its eligibility for using Fuel

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Use Monitoring Methods:

- (1) Estimate its annual CO₂ emissions by collecting and totaling fuel invoices; or
- (2) Use the ICAO CORSIA CERT, as described in Appendix B, to estimate its annual CO₂ emissions.

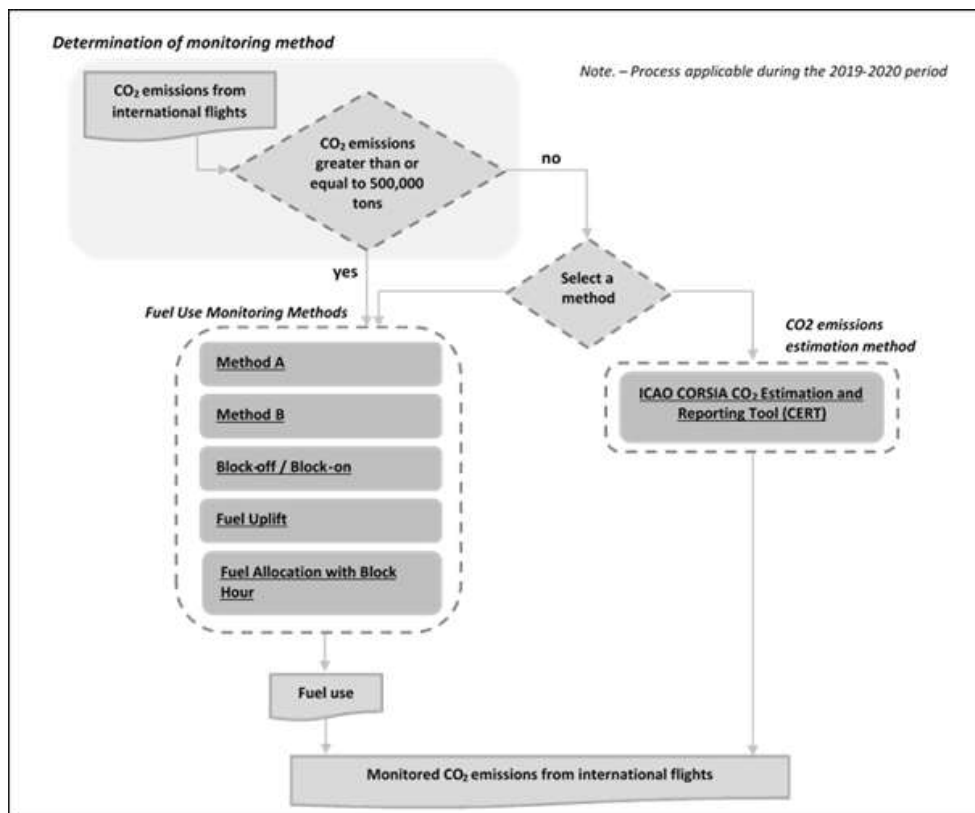


Figure 2-2: Determination of eligible Fuel Use Monitoring Methods during the 2019-2020 period

ii.2021-2035 period

a. The eligibility threshold for using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), as defined in GACAR 157 Appendix C, is different for the 2019-2020 period and subsequent compliance periods. An airplane operator may need to reassess whether it is eligible to use the ICAO CORSIA CERT

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tool using the following processes.

- (1) The airplane operator, with annual CO₂ emissions from international flights subject to offsetting requirements of greater than or equal to 50,000 tons, must use a Fuel Use Monitoring Method for these flights. For international flights not subject to offsetting requirements, the airplane operator must use either a Fuel Use Monitoring Method, or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT).
- (2) The airplane operator, with annual CO₂ emissions from international flights subject to offsetting requirements of less than 50,000 tons, must use either a Fuel Use Monitoring Method or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT).
- (3) If the airplane operator's annual CO₂ emissions from international flights subject to offsetting requirements increases above the threshold of 50,000 tons in a given year (y), and also in year (y+1), the airplane operator must submit an updated Emissions Monitoring Plan by 30 September of year (y + 2). The airplane operator must change to a Fuel Use Monitoring Method on 1 January of year (y+3).
- (4) If the airplane operator's annual CO₂ emissions from international flights subject to offsetting requirements decreases below the threshold of 50,000 tons in a given year (y), and also in year (y+1), the airplane operator may change monitoring method on 1 January of year (y+3). If the airplane operator chooses to change its monitoring method, it must submit an updated Emissions Monitoring Plan by 30 September of year (y + 2).
- (5) If the airplane operator used the ICAO CORSIA CERT for the 2019-2020 period, but has now determined that its emissions from international flights subject to offsetting requirements exceed 50,000 tons for the 2021-2023 period, then this will constitute a material change requiring the Emissions Monitoring Plan to be updated accordingly and resubmitted to GACA to for re-approval.

b. Following the provision of information contained in the ICAO document entitled "CORSIA States for Chapter 3 State Pairs" that is available on the ICAO CORSIA website:

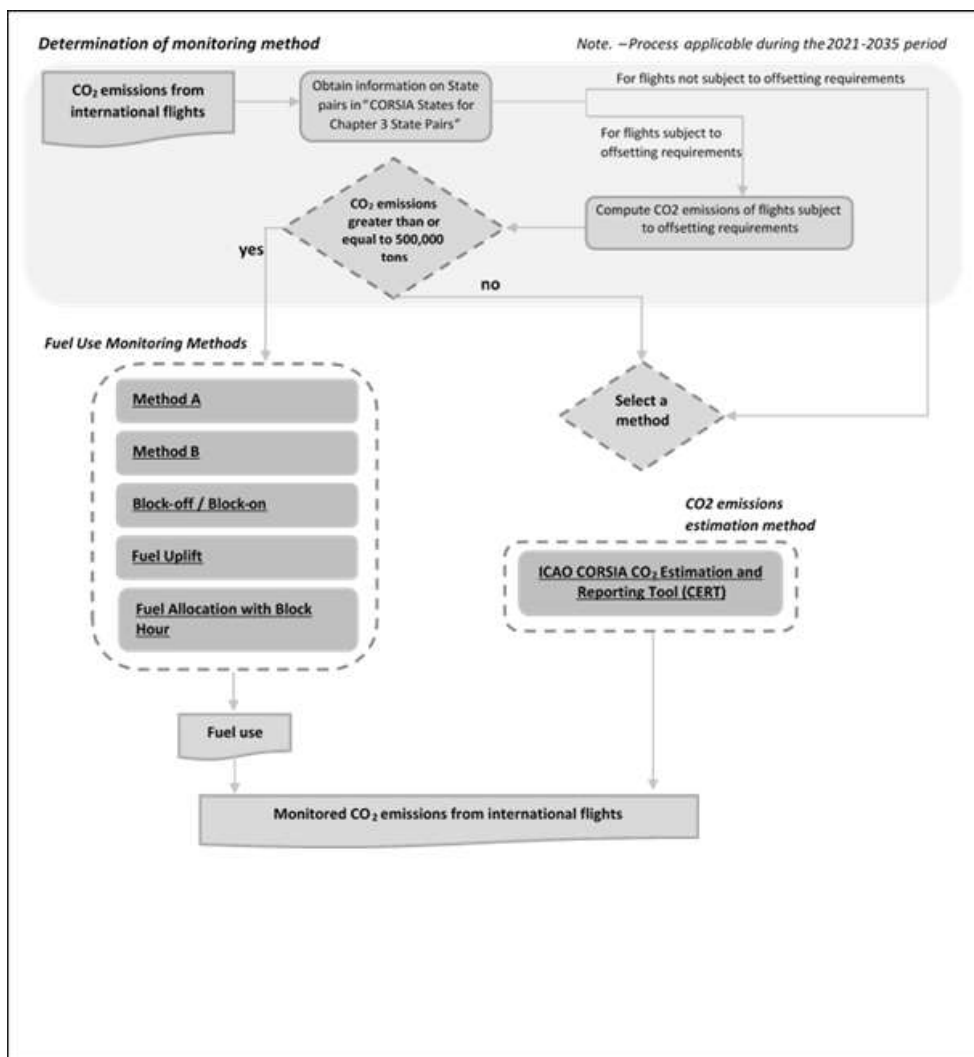
- (1) Using reported CO₂ emissions from 2019 (seen as a reasonable proxy for an estimate for 2021 data), determine the annual emissions from State pairs subject to offsetting requirements from 2021.

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However, if the airplane operator expects that its traffic and emissions will change significantly in 2021, then it should take that into account and anticipate a potential change in its eligibility to use either a Fuel Use Monitoring Method or the ICAO CORSIA CERT;

(2) Estimate annual CO₂ emissions by collecting and totaling fuel invoices from international flights on State pairs subject to offsetting requirements according to the first-order estimation methodology as described below; or

(3) Use the ICAO CORSIA CERT to estimate its annual CO₂ emissions from State pairs subject to offsetting requirements.



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Figure 2-3: Determination of eligible Fuel Use Monitoring Methods during the compliance periods (2021-2035)

iii. First-order estimation methodology for determining applicability scope of CORSIA and eligibility of use of simplified compliance procedures

c. Figure 3-4 presents an overview of a decision tree for an airplane operator to determine whether it is outside the applicability scope of CORSIA and therefore has no compliance requirements, or if not, whether they are eligible to use the ICAO CORSIA CERT.

d. The decision starts with gathering fuel use for all international flights of the airplane operator. Alternatively, an airplane operator can also choose to use the ICAO CORSIA CERT directly.

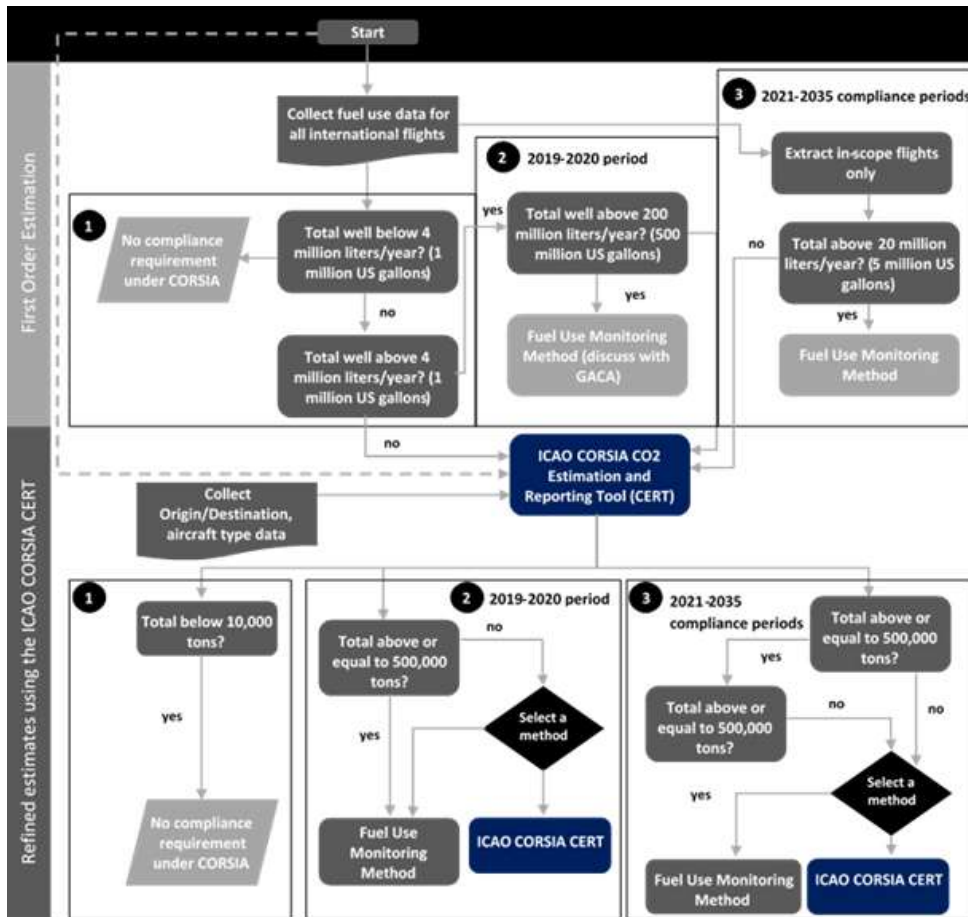


Figure 2-4. Overview of a decision tree for operators to determine whether they are outside the

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applicability scope of CORSIA

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iv. Threshold of annual CO₂ emissions from international flights of 10,000 tons an airplane operator could use the following methods to determine whether its annual CO₂ emissions from international flights are less than or equal to 10,000 tons:

e. Using fuel invoice information, assess whether the airplane operator has used less than 4 million liters of aviation fuel on international flights (any flight regardless of whether it is in the scope of applicability) in the past year. If so, the Airplane operator would probably be outside the applicability scope of CORSIA;

f. If fuel invoice information identifies that annual consumption is close to 4 million liters – either above or below – and it is not completely certain that fuel use is below this threshold, the airplane operator should consider using the ICAO CORSIA CERT (enter data on all international flights) to confirm whether or not emissions from international are above the annual 10,000-ton threshold;

g. A full continuous 12 months' data within the 2017-2018 period can be seen as a reasonable proxy for an estimate of 2019 CO₂ emissions. However, if the airplane operator does not have a full year of data or expects that its traffic and emissions will change significantly it should take that into account;

h. In the absence of any fuel invoice information, an airplane operator may use the ICAO CORSIA CERT to determine if it is above or below the 10,000-ton threshold of annual CO₂ emissions from international flights.

v. Threshold for determining eligibility of use of the ICAO CORSIA CERT during the 2019-2020 period

i. The 500,000-ton threshold is used to determine whether an airplane operator is eligible to use the ICAO CORSIA CERT during the 2019-2020 period. An airplane operator could use the following methods to determine whether its annual CO₂ emissions from international flights fall below the threshold of 500,000 tons:

(4) Using fuel invoice information from an appropriate one-year period to assess whether the airplane operator has used more than 200 million liters of fuel per year on all international flights;

(5) If fuel invoice information identifies that annual consumption is within the region of 200 million liters, and the airplane operator is not completely certain that its emissions are under or over the threshold, the airplane operator should consider using the ICAO CORSIA CERT (enter data on all international flights) to confirm whether or not emissions from international flights fall above or below the emissions threshold;

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(6) In the absence of any fuel invoice information, an airplane operator may use the ICAO CORSIA CERT, to determine if its emissions are above or below the threshold.

vi. Threshold for determining eligibility of use of the ICAO CORSIA CERT during the 2021-2035 period

j. The 50,000-ton threshold is used to determine whether an airplane operator is eligible to use the ICAO CORSIA CERT during the 2021-2035 period. An airplane operator should use the following methods to determine whether its annual CO₂ emissions from international flights subject to offsetting requirements, fall below the threshold of 50,000 tons:

(7) An airplane operator should identify international flights based on State of origin and destination;

(8) Using fuel invoice information from an appropriate one-year period to assess whether the airplane operator has used more than 20 million liters of aviation fuel per year on international flights subject to offsetting requirements. If so, the airplane operator should use a Fuel Use Monitoring Method;

(9) If fuel invoice information identifies that annual consumption is within the region of the 20 million liters, and the airplane operator is not completely certain that emissions fall above or below the threshold, the airplane operator should consider using the ICAO CORSIA CERT by entering information on international flights subject to offsetting requirements to confirm whether or not emissions fall above or below this threshold;

(10) In the absence of any fuel invoice information, an airplane operator may use the ICAO CORSIA CERT to determine if its emissions are below the emissions threshold. Where an airplane operator has an approved Emissions Monitoring Plan, the Fuel Use Monitoring Method stated in the Emissions Monitoring Plan should be used to determine whether flight emissions fall below this threshold. This will generally be determined from their on-going monitoring and reporting requirements.

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17.2.2.2. Fuel Density

a. Measurement of fuel density is a well-established and important procedure within the fuel delivery and quality assurance process. It is systematically measured and recorded throughout the value chain - from supplier, to tank farm operator, to fueling agent and finally to airplane operator. However, the level of data on fuel density at an airplane operator level will vary depending on their own requirements and procedures. This section provides information on these key stages of the fuel delivery chain and how data on fuel density is measured and 'transferred' from one stakeholder to another.

vii. Calculation of CO₂ emissions from airplane fuel use

a. The airplane operator must apply a fuel density value to calculate fuel mass where the amount of fuel uplift is determined in units of volume.

b. The airplane operator must record the fuel density (which may be an actual or a standard value of 0.8 kg per liter) that is used for operational and safety reasons (e.g., in an operational, flight or technical log). The procedure for informing the use of actual or standard density must be detailed in the Emissions Monitoring Plan along with a reference to the relevant Airplane operator documentation.

c. The airplane operator using a Fuel Use Monitoring Method, as defined in Appendix A, must determine the CO₂ emissions from international flights using the following equation:

$$CO_2 = \sum M_f * FCF_f$$

where:

CO₂ = CO₂ emissions (in tons);

M_f = Mass of fuel f used (in tons); and

FCF_f = Fuel conversion factor of given fuel f, equal to 3.16 (in kg CO₂/kg fuel) for Jet-A fuel / Jet-A1 fuel and 3.10 (in kg CO₂/kg fuel) for AvGas or Jet-B fuel.

Note. – For the purpose of calculating CO₂ emissions the mass of fuel used includes all aviation fuels.

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Figure 3-5. Process of monitoring and collecting fuel density

17.2.2.3. Tank farm operator

- a. The tank farm operator is responsible for maintaining the fuel storage system and dispatch of fuel for the aerodrome;
- b. Fuel density is physically measured by the tank farm operator as part of fuel dispatch quality assurance checks. This is done for every fuel batch and likely to be at least once a day. The tank farm operator follows guidance from the Joint Inspection Group^[1] using international standardized methods to measure density;
- c. The density information is then recorded and passed to fueling agent/other stakeholders, as part of the fuel dispatch certification.

17.2.2.4. Fueling agent

- a. The fueling agent is responsible for uplifting/delivering fuel to the airplane;
- b. Fueling agents require fuel density information as part of fueling activity/conversion calculations and is provided to airplane operator for their records;
- c. Density information is provided to fueling agent directly from tank farm operator.

17.2.2.5. Airplane operator

- a. At the airplane operator level, fuel density data is captured through existing flight on-board systems to Airplane operator post flight systems supported by various flight paperwork on a flight by flight level;
- b. The level at which airplane operator records fuel density information varies in terms of their individual process and procedures.

17.2.2.6. Fuel Use Monitoring Method

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a. The airplane operator, with the exception of an airplane operator eligible to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), must choose from the following fuel use monitoring methods:

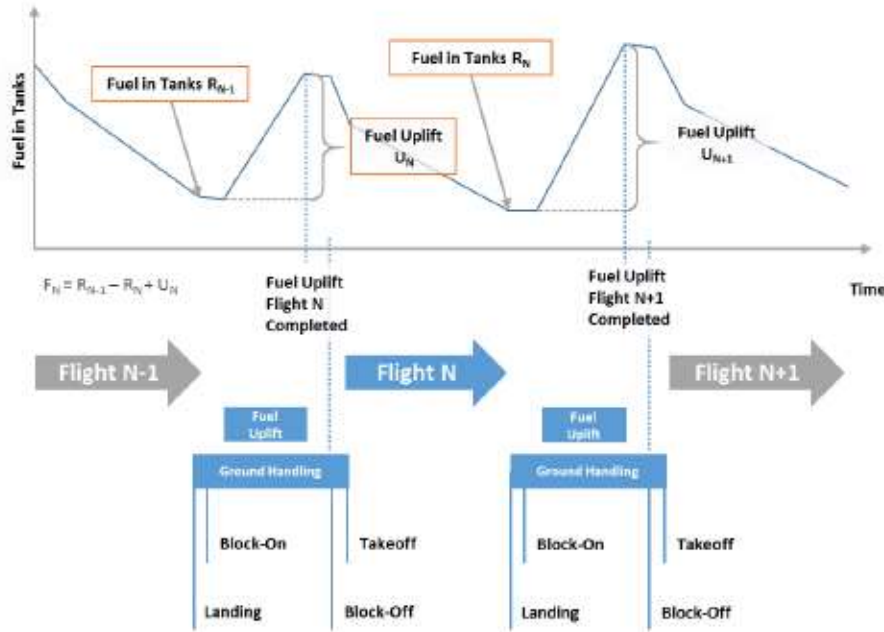
- (1) Method A;
- (2) Method B;
- (3) Block-off / Block-on;
- (4) Fuel Uplift; or
- (5) Fuel Allocation with Block Hour.

b. These methods are defined in Appendix B

The chosen method is to be defined in the Emissions Monitoring Plan and approved by the President prior to the monitoring period. The chosen monitoring method will be applied for the whole compliance period. Any changes to the Fuel Use Monitoring Method require a resubmission to and re-approval by the President for the next compliance period.

[\[1\]](#)The world-leading organization for the development of aviation fuel supply standards covering the entire supply chain for Aviation Fuels.

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17.2.2.7. Monitoring CORSIA eligible fuels claims

a. If the airplane operator cannot demonstrate the compliance of the CORSIA eligible fuel with the CORSIA Sustainability Criteria, then it must not be accounted for as CORSIA eligible fuel. The CORSIA eligible fuels purchased by a particular air operator may not be physically used in its airplane, and it will not be feasible to determine the specific CORSIA eligible fuel content at the point of uplift in an airplane. Claims of emissions reductions from the use of CORSIA eligible fuels by an airplane operator are based on mass of CORSIA eligible fuels according to purchasing and blending records.

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**CHAPTER 3: CO₂ EMISSIONS ESTIMATION AND REPORTING METHODS AND
TOOLS**

17.3.1.Introduction

a. The procedures specified in this chapter are concerned with the estimation of CO₂ emissions by an airplane operator for the purposes of monitoring CO₂ emissions and filling data gaps. The methods and tools proposed are representative of most accurate established practices.

17.3.2. ICAO CORSA CO₂ Estimation and Reporting Tool (CERT)

a. Use of the ICAO CORSA CERT (Appendix C) for complying with monitoring and reporting requirements. The ICAO CORSA CERT is developed for and made available to airplane operators to support the monitoring and reporting of their CO₂ emissions. The CERT supports airplane operators in fulfilling their monitoring and reporting requirements by populating the standardized Emissions Monitoring Plan and Emissions Report templates provided in Appendix C. This support includes:

- (1) Assessing its eligibility to use the CERT in support of their Emissions Monitoring Plan (e.g., CO₂ emissions threshold requirements);
- (2) Assessing whether or not it is within the applicability scope of GACAR part 157, Subpart C MRV requirements; and
- (3) Filling any CO₂ emissions data gaps.

b. The airplane operator may use CERT according to the eligibility criteria as described in GACAR part 157, Subpart C.

c. The airplane operator may use either the (1) Block Time input method or (2) the Great Circle Distance input method to enter the necessary information into CERT.

d. The airplane operator using the Block Time input method will collect the following data and must enter

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it into CERT to estimate its CO₂ emissions during the compliance year:

- (1) ICAO aircraft type - model designator;
- (2) Origin aerodrome ICAO Designator;
- (3) Destination aerodrome ICAO Designator;
- (4) Block time (in hours);
- (5) Number of flights;
- (6) Date (optional); and
- (7) Flight ID (optional).

e. The airplane operator using the Great Circle Distance input method will collect the following data and must enter it into CERT to estimate its CO₂ emissions during the compliance year:

- (1) ICAO aircraft model - type designator;
- (2) Origin aerodrome;
- (3) Destination aerodrome;
- (4) Number of flights;
- (5) Date (optional); and
- (6) Flight ID (optional).

f. CERT will automatically compute Great Circle Distance based on the origin aerodrome and destination aerodrome.

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CHAPTER 4: EMISSIONS MONITORING PLAN

17.4.1. Introduction and Material Changes

- a. The airplane operator must submit an Emissions Monitoring Plan, which is required to be approved by the President.
- b. The airplane operator must resubmit the Emissions Monitoring Plan to GACA for approval if a material change is made to the information contained within the Emissions Monitoring Plan (i.e., a change to the information presented in the plan that would affect the status or eligibility of the airplane operator for an option under the emissions monitoring requirements, or that would otherwise affect the decision by GACA with regard to whether the airplane operator's approach to monitoring conforms with the requirements).
- c. The airplane operator must also inform GACA of changes that would affect GACA's oversight (e.g., change in corporate name or address), even if the changes do not fall within the definition of a material change.
- d. If the airplane operator's Emissions Monitoring Plan is determined to be incomplete and/or inconsistent with the Emissions Monitoring Plan requirements in Appendix C, GACA will engage with the airplane operator to resolve outstanding issues. This may involve returning the Emissions Monitoring Plan to the airplane operator along with an explanation as to why the plan was found deficient, or a request for further information.

17.4.2. Content of Emissions Monitoring Plans

17.4.2.1. Airplane operator identification

- a. Name and address of the airplane operator with legal responsibility.
- b. Information for attributing the airplane operator to a State:

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- (1) ICAO Designator: ICAO Designator(s) used for air traffic control purposes, as listed in Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.
- (2) Air operator certificate: If the airplane operator does not have an ICAO Designator, then a copy of the air operator certificate.
- (3) Place of registration: If the airplane operator does not have an ICAO Designator or an air operator certificate, then the airplane operator’s place of registration.

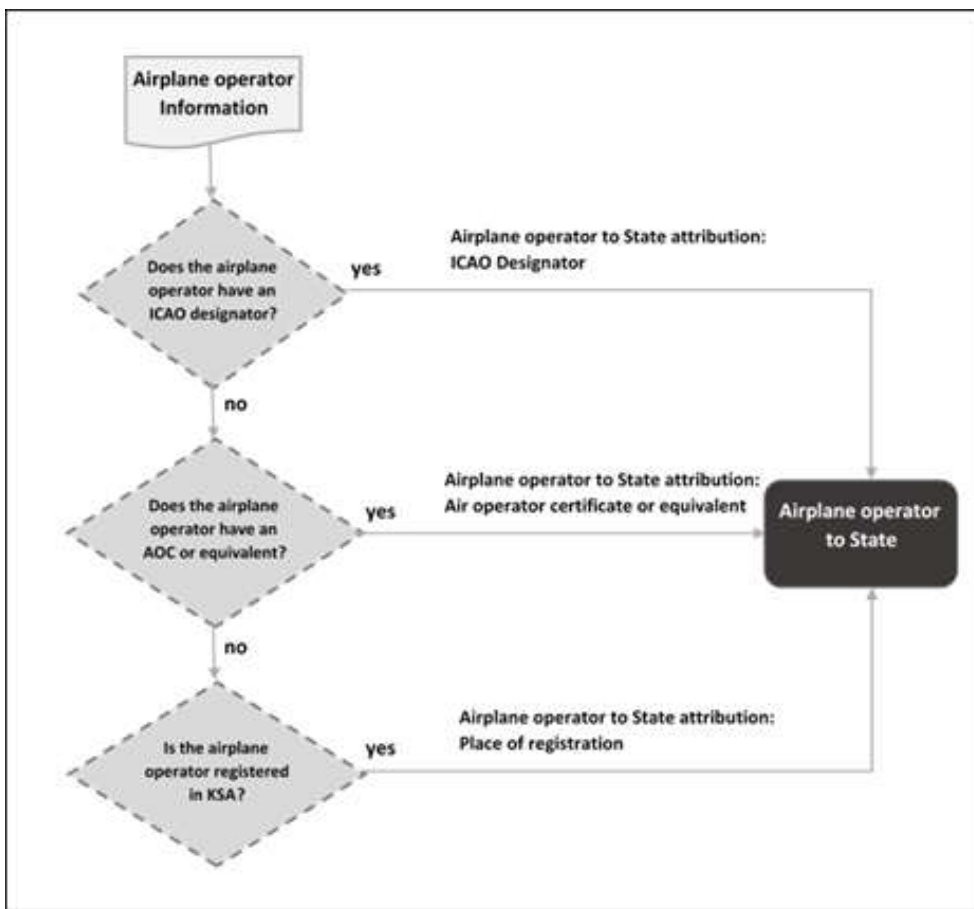


Figure 4-1 Process for attribution of an Airplane operator to a State

c. Details of ownership structure relative to any other airplane operators with international flights including identification of whether the airplane operator is a parent company to other airplane operators with international flights a subsidiary of another airplane operator(s) with international flights and/or has

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a parent and or subsidiaries that are airplane operators with international flights.

d. If the airplane operator in a parent-subsidary relationship seeks to be considered a single airplane operator for purposes of GACAR part 157, then confirmation must be provided that the parent and subsidiary(ies) are attributed KSA and that the subsidiary(ies) are wholly-owned by the parent.

e. Contact information for the person within the airplane operator's company who is responsible for the Emissions Monitoring Plan.

f. Description of the airplane operator's activities (e.g. scheduled/non-scheduled, passenger/cargo/executive, and geographic scope of operations).

17.4.2.2. Fleet and operations data

a. List of the airplane types and type of fuel (e.g. Jet-A, Jet-A1, Jet-B, AvGas) used in airplanes operated for international flights at the time of submission of the Emissions Monitoring Plan, recognizing that there may be changes over time. The list must include:

(1) Airplane types with a maximum certificated take-off mass of 5,700 kg or greater and the number of airplane per type, including owned and leased airplanes;

Note 1. —Airplane types are contained in Doc 8643 — Aircraft Type Designators.

Note 2. —The airplane operator using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) could use the functionality of the CERT to identify applicable airplane types.

(2) Type of fuel(s) used by the airplanes (e.g., Jet-A, Jet-A1, Jet-B, AvGas).

Note 3. —The airplane operator using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) does not need to specify the type of fuel used by airplanes.

b. Information used for attributing international flights to the airplane operator:

(1) ICAO Designator: List of the ICAO Designator(s) used in Item 7 of the airplane operator's flight plans.

(2) Registration marks: If the airplane operator does not have an ICAO Designator, then a list of the nationality or common mark, and registration mark of airplanes that are explicitly stated in the air operator certificate (or equivalent) and used in Item 7 of the airplane operator's flight plans.

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c. Procedures on how changes in the airplane fleet and fuel used will be tracked, and subsequently integrated in the Emissions Monitoring Plan.

d. Procedures on how the specific flights of an airplane will be tracked to ensure completeness of monitoring.

e. Procedures for determining which airplane flights meet the definition of international flights and are therefore subject to the GACAR part 157, Subpart C requirements.

Note. —The airplane operator using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) could use the functionality of the CERT to identify international flights as long as all flights (i.e., domestic and international) conducted during the reporting year are entered as input into the tool.

of States to where the airplane operator operates international flights at the time of initial submission of the Emissions Monitoring Plan.

Note. —The airplane operator using the estimation functionality of the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) to assess its eligibility to use the CERT could use the output of the tool (i.e., list of States) as input to the Emissions Monitoring Plan submission.

cedures for determining which international airplane flights are subject to GACAR part 157, Subpart D requirements.

—The airplane operator using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) could use the functionality of the CERT to identify flights subject to offsetting requirements in accordance with GACAR part 157, Subpart D, 157.33, in a given year of compliance as long as the Airplane operator uses the correct version (i.e., year of compliance) of the CERT.

cedures for identifying domestic flights and/or humanitarian, medical or firefighting international flights that would not be subject to GACAR part 157, Subpart C requirements.

17.4.2.3. Methods and means of calculating emissions from international flights

i. Methods and means for establishing the average emissions during the 2019-2020 period

a. If the airplane operator meets the eligibility criteria and chooses to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) then the following information must be provided:

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(1) An estimate of CO₂ emissions for all international flights for 2019 with supporting information on how the estimation was calculated.(2) The type of input method used in the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT):

- Great Circle Distance input method; or
- Block Time input method.

b. If the airplane operator meets the eligibility criteria in Section 2.1 , or chooses to use a Fuel Use Monitoring method, then the following information must be provided:

(1) The Fuel Use Monitoring Method that will be used:

- Method A;
- Method B;
- Block-off / Block-on;
- Fuel Uplift; or
- Fuel Allocation with Block Hour.

(2) If different Fuel Use Monitoring Methods are to be used for different airplane types, then the airplane operator must specify which method applies to which airplane type;

(3) Information on the procedures for determining and recording fuel density values (standard or actual) as used for operational and safety reasons and a reference to the relevant airplane operator documentation; and

(4) The systems and procedures to monitor fuel consumption in both owned and leased airplane. If the airplane operator has chosen the Fuel Allocation with Block Hour method, information is provided on the systems and procedures used to establish the average fuel burn ratios as described in Appendix B.

c. If the airplane operator is in a parent-subsidiary relationship and seeks to be considered as a single airplane operator for purposes of GACAR part 157, then it must provide the procedures that will be used for maintaining records of fuel used and emissions monitored during the 2019-2020 period of the various corporate entities. This must be used to establish individual average emissions during the 2019-2020 period for the parent and subsidiary (or subsidiaries).

ii. Methods and means for emissions monitoring and compliance on or after 1 January 2021

a. If the airplane operator has international flights that are not subject to offsetting requirements as defined in GACAR part 157, Subpart D, 157.33, then it must confirm whether it plans to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) or the Fuel Use Monitoring Methods.

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b. If the airplane operator meets the eligibility criteria in Section 2.1, and it chooses to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) then the following information must be provided:

(1) An estimate of CO₂ emissions for all international flights subject to offsetting requirements for the year before the emissions monitoring is to occur (for example, an estimate of such emissions for 2020 for monitoring in 2021), as well as information on how the fuel use and CO₂ estimation was calculated.

(2) The type of input method used in the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT):

- Great Circle Distance input method; or
- Block Time input method.

c. If the airplane operator meets the eligibility criteria in Section 2.1, or chooses to use a Fuel Use Monitoring method, then the following information must be provided:

(1) The Fuel Use Monitoring Method that will be used:

- Method A;
- Method B;
- Block-off / Block-on;
- Fuel Uplift; or
- Fuel Allocation with Block Hour.

(2) If different Fuel Use Monitoring Methods are to be used for different airplane types, then the airplane operator must specify which method applies to which airplane type;

(3) Information on the procedures for determining and recording fuel density values (standard or actual) as used for operational and safety reasons and a reference to the relevant Airplane operator documentation; and

(4) The systems and procedures to monitor fuel consumption in both owned and leased airplane. If the airplane operator has chosen the Fuel Allocation with Block Hour method, information must be provided on the systems and procedures used to establish the average fuel burn ratios.

d. If the airplane operator is using a Fuel Use Monitoring Method, it must state whether it plans to use CERT for international flights that are subject to emissions monitoring but not offsetting requirements. If so, the airplane operators must also state which input method into CERT is being used (i.e., Great Circle Distance input method or Block Time input method).

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17.4.2.4. Data management, data flow and control

a. The airplane operator must provide the following information:

(1) Roles, responsibilities and procedures on data management;

(2) Procedures to handle data gaps and erroneous data values, including:

i. Secondary data reference sources which would be used as an alternative;

ii. Alternative method in case the secondary data reference source is not available; and

iii. For those airplane operators using a Fuel Use Monitoring Method, information on systems and procedures for

identifying data gaps and for assessing whether the 5 per cent threshold for significant data gaps has been reached.

(3) Documentation and record keeping plan;

(4) Assessment of the risks associated with the data management processes and means for addressing significant risks;

(5) Procedures for making revisions to the Emissions Monitoring Plan and resubmitting relevant portions to the State when there are material changes;

(6) Procedures for providing notice in the Emissions Report of non-material changes that require the attention of the State; and

17.4.3. Approval of the emission monitoring plan

a. Following submission of the Emissions Monitoring Plan by the airplane operator, GACA will approve it, or return the Emissions Monitoring Plan for additional questions and clarifications before final approval.

b. Prior to the 2019-2020 period, GACA will aim to approve the airplane operator's Emissions Monitoring Plan and associated Fuel Use Monitoring Method according to the eligibility criteria in

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GACAR 157, § 157.23 while taking into account the following:

- c. Airplane operators with annual emissions from international flights, as described in GACAR 157, § 157.11 and § 157.21, of less than 500 000 tons may use the ICAO CORSIA CERT;
- d. If an airplane operator can reasonably be expected to have the capability to implement a Fuel Use Monitoring Method as described in Appendix B, and is expected to have annual CO₂ emissions greater than 500,000 tons during the first compliance period, GACA will not approve the airplane operator to use the ICAO CORSIA CERT;
- e. If an airplane operator has annual CO₂ emissions greater than or equal to 500 000 tons, but is expected to have annual CO₂ emissions lower than 500,000 tons during the first compliance period, GACA may choose to approve its use of the ICAO CORSIA CERT.

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CHAPTER 5: Reporting

17.5.1. Introduction

- a. The procedures specified in this E-Book are concerned with the reporting requirements under GACAR part 157. Unless otherwise stated, fuel use and CO₂ emissions must be reported to the nearest ton.
- b. The airplane operator should use the standardized Emissions Report template provided in Appendix D.
- c. When the airplane operator reports its consolidated CO₂ emissions from international flights, during the 2019-2020 period, including subsidiary airplane operators, disaggregated data relating to each subsidiary airplane operator shall be appended to the main Emissions Report.

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17.5.2. Content of Emissions Report from Airplane Operator to GACA

Table 5-1. Content of Airplane Operator Emissions Report

Field #	Data Field	Details
Field 1	Airplane operator information	1.a Name of Airplane operator 1.b Detailed contact information of Airplane operator 1.c Name of a point of contact 1.d Method and identifier used to attribute an Airplane operator to a State in accordance with GACAR 157.11 1.e State
Field 2	Reference details of Airplane operator Emissions Monitoring Plan	2 Reference to the Emissions Monitoring Plan that is the basis for emissions monitoring that year Note. - State may require providing reference to updated Emissions Monitoring Plan, if applicable.
Field 3	Information to identify the verification body and Verification Report	3.a Name and contact information of the verification body 3.b Verification Report to be a separate report from airplane operator's Emissions Report
Field 4	Reporting year	4. Year during which emissions were monitored
Field 5	Type and mass of fuel(s) used	5.a Total fuel mass per type of fuel: <ul style="list-style-type: none"> • Jet-A (in tons) • Jet-A1 (in tons) • Jet-B (in tons) • AvGas (in tons) Note 1. – Above totals to include CORSIA eligible fuels. Note 2.- The Airplane operator using the ICAO CORSIA CERT, does not need to report Field 5.
Field 6	Total number of international flights during the reporting period	6.a Total number of international flights during the reporting period Note. - Total (sum of values from Field 7)
Field 7	Number of international flights per State pair or aerodrome pair	7.a Number of international flights per State pair (no rounding); or 7.b Number of international flights, as defined in GACAR 157.9 per aerodrome pair (no rounding).
Field 8	CO ₂ emissions per aerodrome pair or State pair	8.a. CO ₂ emissions from international flights per State pair (in tons); or 8.b. CO ₂ emissions from international flights per aerodrome pair (in tons).
Field 9	Scale of data gaps	9.a Per cent of data gaps (according to criteria defined in GACAR 157.29 (a) (1) and rounded to the nearest 0.1%) 9.b Reason for data gaps if per cent of data gaps exceeds the threshold.
Field 10	Airplane information	10.a List of airplane types 10.b Airplane identifiers used in flight plans' Item 7 during the year for all international flights. Where the identifier is based on an ICAO Designator, only the ICAO Designator is to be reported 10.c Information on leased airplanes 10.d Average fuel burn ratio (AFBR) for each airplane type under 10. a in line with Doc 8643 — <i>Aircraft Type Designator</i> (in tons per hour to 3 decimal places) Note: - 10.d is only required if the Airplane operator is using the Fuel Allocation with Block Hour method.

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Field 11	Eligibility for and use of the ICAO CORSIA CO ₂ Estimation and Reporting Tool (CERT) Section 12.1 (d)	11.a Version of the ICAO CORSIA CERT used 11.b Scope of use of the ICAO CORSIA CERT i.e., on all flights or only on the international flights not subject to offsetting requirements
Field 12 Note- If emissions reductions from the use of CORSIA eligible fuel are claimed, see Table 6-2 for supplementary information that is to be provided with the airplane operator's Emissions Report.	CORSIA eligible fuel claimed	12.a Fuel type (i.e., type of fuel, feedstock and conversion process) 12.b Total mass of the neat CORSIA eligible fuel claimed (in tons) per fuel type
	Emissions information (per fuel type)	12.c Approved Life Cycle Emissions values 12.d Emissions reductions claimed from a CORSIA eligible fuel (reported in tons)
	Emissions reductions (total)	12.e Total emissions reductions claimed from the use of all CORSIA eligible fuels (in tons) <i>Note.</i> – During the 2019-2020 period, fields 12.a to 12.e are not required as the applicability of GACAR 157 Subpart D starts on 1 January 2021 i.e., there are no offsetting requirements and no emissions reductions from the use of CORSIA eligible fuels during the 2019-2020 period.
Field 13	Total CO ₂ emissions	13.a Total CO ₂ emissions (based on total mass of fuel in tons from Field 5 and reported in tons) 13.b Total CO ₂ emissions from flights subject to offsetting requirements (in tons) 13.c Total CO ₂ emissions from international flights and that are not subject to offsetting requirements (in tons) <i>Note.</i> – During the 2019-2020 period, only fields 13.a is required as the applicability of GACAR 157 Subpart D starts on 1 January 2021 i.e., there are no State pairs subject to offsetting requirements during the 2019-2020 period.

d. GACA may expand on this list to include additional or more detailed data from airplane operators registered in KSA.

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Table 5-2. Supplementary information to an Airplane operator's Emissions Report if emissions reductions from the use of each CORSIA eligible fuel being claimed²

Field #	Data Field	Details
Field 1	Purchase date of the neat CORSIA eligible fuel	
Field 2	Identification of the producer of the neat CORSIA eligible fuel	2.a Name of producer of the neat CORSIA eligible fuel 2.b Contact information of the producer of the neat CORSIA eligible fuel
Field 3	Fuel Production	3.a Production date of the neat CORSIA eligible fuel 3.b Production location of the neat CORSIA eligible fuel 3.c Batch number of each batch of neat CORSIA eligible fuel 3.d Mass of each batch of neat CORSIA eligible fuel produced
Field 4	Fuel type	4.a Type of fuel (i.e., Jet-A, Jet-A1, Jet-B, AvGas) 4.b Feedstock used to create the neat CORSIA eligible fuel 4.c Conversion process used to create the neat CORSIA eligible fuel
Field 5	Fuel Purchased	5.a Proportion of neat CORSIA eligible fuel batch purchased (rounded to the nearest %) Note. - If less than an entire batch of CORSIA eligible fuel is purchased. 5.b Total mass of each batch of neat CORSIA eligible fuel purchased (in tons) 5.c Mass of neat CORSIA eligible fuel purchased (in tons) Note. — Field 5.c is equal to the total for all batches of CORSIA eligible fuels reported in Field 5.b.
Field 6	Evidence that fuel satisfies the CORSIA Sustainability Criteria	i.e., valid sustainability certification document
Field 7	Life cycle emissions values of the CORSIA eligible fuel	7.a Default or Actual Life Cycle Emissions Value (LSE) for given CORSIA eligible fuel f, which is equal to the sum of 7.b and 7.c (in gCO ₂ e/MJ rounded to the nearest whole number) 7.b Default or Actual Core Life Cycle Assessment (LCA) value for given CORSIA eligible fuel f (in gCO ₂ e/MJ rounded to the nearest whole number) 7.c Default Induced Land Use Change (ILUC) value for given CORSIA eligible fuel f (in gCO ₂ e/MJ rounded to the nearest whole number)
Field 8	Intermediate purchaser	8.a Name of the intermediate purchaser 8.b Contact information of the intermediate purchaser Note. — This information would be included in the event that the airplane operator claiming emissions reductions from the use of CORSIA eligible fuels was not the original purchaser of the fuel from the producer (e.g., the airplane operator purchased fuel from a broker or a distributor). In those cases, this information is needed to demonstrate the complete chain of custody from production to blend point.
Field 9	Party responsible for shipping of the neat CORSIA eligible fuel to the fuel blender	9.a Name of party responsible for shipping of the neat CORSIA eligible fuel to the fuel blender 9.b Contact information of party responsible for shipping of the neat CORSIA eligible fuel to the fuel blender
Field 10	Fuel Blender	10.a Name of the party responsible for blending neat CORSIA eligible fuel with aviation fuel 10.b Contact information of the party responsible for blending neat CORSIA eligible fuel with aviation fuel

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Field 11	Location where neat CORSIA eligible fuel is blended with aviation fuel	
Field 12	Date the neat CORSIA eligible fuel was received by blender	
Field 13	Mass of neat CORSIA eligible fuel received (in tons)	Note. - This number may differ from the number in Field 5.c in cases where only a portion of a batch or batches are received by the blender (i.e. due to sale to intermediate purchaser).
Field 14	Blend ratio of neat CORSIA eligible fuel and aviation fuel (rounded to the nearest %)	
Field 15	Documentation demonstrating that the batch or batches of neat CORSIA eligible fuel were blended into aviation fuel (e.g., the subsequent Certificate of Analysis of the blended fuel)	
Field 16	Mass of neat CORSIA eligible fuel claimed (in tons)	Note. - This number may differ from the number in Field 5.c in cases where only a portion of a batch or batches are claimed by the airplane operator.

17.5.3. Order of magnitude check by GACA

a. GACA will perform an order of magnitude check of the Emissions Report of the airplane operator as described in GACAR 157 §157.27 (a) (3). The order of magnitude check will follow a set of standardized requirements as outlined in Table 5-3. For an average sized airplane operator with a satisfactory verified Emissions Report, the order of magnitude check should not take longer than approximately three hours.

Table 5-3. GACA Order of Magnitude Checklist

<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes/No/Not Applicable</i>	<i>Notes and results of checks</i>
Airplane operator				
1	Airplane operator/verification body both separately submit Emissions Report and Verification Report. Is the content of both submissions identical?	Minimum check: Get back to airplane operator in case of deviations.		

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<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes /No/Not Applicable</i>	<i>Notes and results of checks</i>
2	Is the name of the airplane operator given and unambiguous?	Ensure unambiguous identification of airplane operator. Get back to airplane operator in case of uncertainties.		
3	Is there a valid ICAO Designator for airplane operating agencies? Does it have the correct length?	Ensure unambiguous identification of airplane operator. Get back to airplane operator in case of uncertainties.		
4	Basic information (address, AOC etc.) plausible?	Ensure unambiguous identification of airplane operator. Get back to airplane operator in case of uncertainties.		
5	Has the airplane operator identified its competent and responsible authority?	If there is indication of another State being in charge, get back to relevant Sate and airplane operator.		
6	Has the Emissions Report been submitted in due time?			
7	Are the documents submitted complete? Any blank boxes? Verification Report included?	If no, contact airplane operator.		
8	Does the verification body's Verification Report contain special indications to follow up on?	Verification body's indication have to be paid special attention. If they have an impact on the amount of emissions, get back to airplane operator.		
9	Other defects/comments?			
Emissions Report Information				
10	Has the latest Emissions Report template version been used?	Ensure capturing and reporting fuel consumption according to the latest requirements.		

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11	Date of creation of Emissions Report within the underlying reporting period?	If so, there is the risk of incomplete reporting of flight data. End of year flights might be missing.		
12	Requirement to report?	Check threshold for annual CO ₂ emissions from international flights, as defined in GACAR §157.3 a) and §157.9, are greater than 10,000 tons.		
<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes/No/Not Applicable</i>	<i>Notes and results of checks</i>
13	Are there any State pairs reported that are subject to offsetting requirements?	If so, in depth investigation of these reported State pairs.		
14	Has the Emissions Report been verified?	If verification is missing, get back to airplane operator and request verification of Emissions Report		
15	Has the Emissions Report been created on the basis of an Emissions Monitoring Plan that is available to GACA?	If not, Emissions Monitoring Plan version used by airplane operator should be requested. Verification body notes should be considered.		
16	Is the underlying Emissions Monitoring Plan approved by GACA?	If not, investigate reason. Check and approve Emissions Monitoring Plan. It has to be ensured that the number of flights and fuel quantity are monitored completely.		
17	Are any collateral clauses part of the approval of the Emissions Monitoring Plan?	If so, implementation has to be tracked and checked.		

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18	Have thresholds of approved Fuel Use Monitoring Methods been exceeded? Is the use of simplified procedure permissible?	In case of inappropriate deviation resulting in lower accuracy, get back to airplane operator		
19	Is there any deviation in capturing CO ₂ emissions in relation to the approved Emissions Monitoring Plan?	Mainly data flow and monitoring method have to be checked in depth. Refer to the Verification Report.		
20	If there is a deviation from approved Emissions Monitoring Plan, is it described accurately?	Is the deviation traceable? Did it lead to any material changes?		
21	If applicable, how does the Verification Report assess deviations from the approved Emissions Monitoring Plan?	Has the verification body investigated and specified any deviation in its Verification Report?		
22	In case of deviations, is re-approval of Emissions Monitoring Plan necessary?	If so, airplane operator has to be requested to amend Emissions Monitoring Plan and submit for approval.		
23	Is the amount of reported CO ₂ emissions roughly plausible?	Individual corresponding parameters like, for example, airplane activity and size of airplane fleet in relation to amount of emissions have, to be considered and cross-checked.		
24	Is the number of flights plausible?	Individual corresponding parameters like, for example, airplane activity and size of airplane fleet in relation to air activity, have to be considered and cross-checked.		
25	Other defects/ comments?			
<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes /No/Not Applicable</i>	<i>Notes and results of checks</i>

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Airplane fleet				
26	Airplane fleet complete and plausible?	If applicable, cross-check with available data sources (e.g. website of airplane operator or public databases). Cross-check, if size of airplane fleet fits to reported airplane activities.		
27	Have registration marks been indicated multiple times?	If so, get back to airplane operator		
28	Other defects/ comments?			
OPTION 1 State pairs (Note: GACA requires reporting by aerodrome pairs)				
29	Are the data sets complete?	Incomplete data sets have to be clarified by airplane operator.		
30	Is the given information regarding number of flights plausible?	Does airplane operator report a noticeable small number of flights on typical destinations of the airline?		
31	Are the types of fuel reported plausible and contained in Emissions Monitoring Plan?	Since emissions factor is fuel type-specific, deviation might lead to implausible amount of calculated emissions.		
32	Generally, is the reported fuel consumption plausible?	In this regard, historical data should be consulted for plausibility checks.		
33	Have outbound and inbound flight been reported separately?	Outbound and inbound flight have to be reported separately. Aggregation is not possible. In case of uncertainty get back to airplane operator.		

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34	In case of usage of multiple fuel types on a certain State pair, has an appropriate number of State pairs been reported?	In this case State pairs have to be reported corresponding to the amount of different types of fuels. Aggregation is not possible. In case of uncertainties get back to airplane operator.		
35	Is classification of State pairs in regard to offsetting requirements correct?	In general, the reporting template generates the classification automatically. However, checking is recommended.		
36	State pairs with equal type of fuel listed multiple times?	In this case only one State pair has to be reported. The amounts have to be summed up. Get back to airplane operator if necessary.		
37	Departure and destination in the same State?	If yes, get back to airplane operator to reinsure.		
38	Are there State pairs with more than 250 tons average fuel consumption per flight?	Calculation is: fuel consumption of respective State pair divided by number of flights. In case of fuel consumption greater than 250 tons per flight get back to airplane operator. This refers to all reported State pairs.		
<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes /No/Not Applicable</i>	<i>Notes and results of checks</i>

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39	Are there State pairs with less than 2.5 tons of fuel consumption per flight?	Calculation is: fuel consumption of respective State pair divided by amount of flights. In case of fuel consumption below 2.5 tons per flight get back to airplane operator. This refers to all reported State pairs.		
40	Random calculation of average fuel consumption per flight (per State pair) and comparison with typical average consumption from the ICAO CORSIA CERT.	The ICAO CORSIA CERT should be consulted for cross-checks. Typically used airplane type can be obtained from public flight tracking data bases or official flight plans of the airplane operator.		
41	Other defects/comments?			
OPTION 2 Aerodrome pairs				
42	Are the data sets complete?	Incomplete data sets have to be clarified by airplane operator.		
43	Is the given information regarding number of flights plausible?	Does airplane operator report a noticeable small number of flights on typical destinations of the airline?		
44	Are the types of fuel reported plausible and contained in Emissions Monitoring Plan?	Since emissions factor is fuel type-specific, deviation might lead to implausible amount of calculated emissions.		
45	Have outbound and inbound flights between two aerodromes been reported separately?	Outbound and inbound flights have to be reported separately. Aggregation is not possible. In case of uncertainty get back to airplane operator.		

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46	In case of usage of multiple fuel types on a certain aerodrome pair, has an appropriate number of State pairs been reported?	In this case aerodrome pairs have to be reported corresponding to the amount of different type of fuels. Aggregation is not possible. In case of uncertainties get back to airplane operator.		
47	Is the classification of aerodrome pairs as regards offsetting requirements correct?	In general, the reporting template generates the classification automatically. However, checking is recommended.		
48	Is the classification of aerodrome pairs as regards offsetting requirements correct?	In general, the reporting template generates the classification automatically. However, checking is recommended.		
49	Have aerodrome pairs with equal type of fuel listed multiple times?	In this case only one aerodrome pair has to be reported. The amounts have to be summed up. Get back to airplane operator if necessary.		
50	Plausibility check: departure and destination in the same State?	If yes, plausibility check and get back to airplane operator to clarify if airplane operator's intention was to report another aerodrome pair.		
<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes /No/Not Applicable</i>	<i>Notes and results of checks</i>
51	Does the airplane operator report more than 3,500 flights on an aerodrome pair?	If so, get back to airplane operator to check plausibility.		

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52	Are there aerodrome pairs with more than 250 tons fuel consumption per flight?	Calculation is: fuel consumption of respective aerodrome pair divided by amount of flights. In case of fuel consumption greater than 250 tons per flight contact airplane operator. This refers to all reported aerodrome pairs.		
53	Are there aerodrome pairs with a fuel consumption of less than 2.5 tons per flight?	Calculation is: fuel consumption of respective aerodrome pair divided by amount of flights. In case of fuel consumption less than 2.5 tons per flight get back to airplane operator. This refers to all reported aerodrome pairs.		
54	Random calculation of average fuel consumption per flight (per aerodrome pair) and comparison with typical average consumption from the ICAO CORSIA CERT.	The ICAO CORSIA CERT should be consulted for cross-checks. Typically used airplane type can be obtained from public flight tracking data bases or official flight plans of the airplane operator.		
55	Other defects/comments?			
Data gaps				
56	Did data gaps occur during the reporting year?	If yes, detailed assessment by GACA required.		
57	Is the applicable threshold of 5 per cent for significant data gaps exceeded?	If yes, which explanations have been provided by the verification body and the airplane operator?		

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58	Has the operator closed/completed data gaps according to the Emissions Monitoring Plan?	A comparison with the method described in the Emissions Monitoring Plan will be carried out.		
59	Have data gaps been closed even though secondary data were available?	If secondary data is available, this data has to be used to close data gaps.		
60	Is the estimated fuel consumption plausible?	The ICAO CORSIA CERT can be used to perform random checks.		
61	Did the operator indicate that data gaps occurred during the reporting year, but did not report data gaps?	If so, get back to airplane operator		
62	Other defects/comments?			
Verification body				
63	Does the verification body have a valid accreditation?	A comparison with the published list of ICAO will be carried out. The verification body will be accredited. Otherwise, the Emissions Report does not meet the requirements of GACAR 157.		
<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes /No/Not Applicable</i>	<i>Notes and results of checks</i>
64	Have all the indications and notes of the verification body been considered?	It is important to pay close attention to the details given in the Verification Report.		
65	Are there any negative assessments from the verification body?	If so, check whether the issues identified affect the amount of reported emissions.		
66	Has the verification body not issued a statement, or issued a negative verification statement? Is the report verified as “not satisfactory”?	The reasons will be examined in depth. Contact the airplane operator.		

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67	Was the verification statement issued during the underlying reporting period already?	If so, the reasons have to be clarified with the verification body. It is necessary to check whether the verification body verified the entire reporting year.		
68	Has the verification body issued a satisfactory verification opinion with comments?	The verification comments will be examined in depth.		
69	Is the content provided in the Verification Report sufficient? Size of data sample and verification program sufficient?	It is necessary to determine whether the verification body carried out a proper and complete verification.		
70	Is there any evidence that the verification body violated the principle of independence? For example, has the verification body supported with the Emissions Monitoring Plan? Has the verification body provided support in drafting the Emissions Report?	It is important to inform the responsible accreditation body.		
71	How is the quality of the verification body assessed?	A rating (good, medium, poor) is useful. Contact with verification body if necessary. It is important to provide feedback to the responsible accreditation body about the performance of verification bodies		
72	Other defects/comments?			
	Change of data by state			
73	Change of data necessary?			

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74	Change of general data?	If so, this will be documented. The airplane operator should be informed		
75	Have emissions-relevant data been changed?	If so, these will be documented. The airplane operator is to be informed in any case.		
76	Other defects/comments?			
Communication with airplane operator				
77	Hearing necessary?			
78	Content of hearing			
79	Has hearing been sent?			
80	Date of hearing, date of sending			
81	Deadline for reply			
<i>No.</i>	<i>Question/Issue</i>	<i>Additional Information</i>	<i>Status: OK/Yes/No/Not Applicable</i>	<i>Notes and results of checks</i>
82	Hearing conclusions			
Communication with verification body				
83	Hearing necessary?			
84	Content of hearing			
85	Has hearing been sent?			
86	Date of hearing, date of sending			
87	Deadline for reply			
88	Hearing conclusions			

17.5.4. Content of Emissions Report from GACA to ICAO

a. List of airplane operators attributed to KSA and verification bodies accredited in KSA

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Table 5-4. GACA Report of airplane operators attributed to KSA and verification bodies accredited in KSA

<i>Field #</i>	<i>Data Field</i>	<i>Details</i>
Field 1	List of airplane operators attributed to KSA	1.a Name and contact information of airplane operator 1.b Airplane Operator Code 1.c Method and identifier used to attribute airplane operator to KSA in accordance with GACAR 157, § 157.9.
Field 2	List of verification bodies accredited in KSA (for a given year of compliance)	2.a State 2.b Name of verification body

b.Note. – Information on the following fields can be found in the ICAO document entitled “CORSA Central Registry (CCR): Information and Data for Transparency” that is available from the ICAO CORSA website:

- 1.List of airplane operator attributed to KSA; and
- 2.List of verification bodies accredited in each State.

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Table 5-5. Emissions Report from GACA to ICAO for 2019 and 2020

<i>Field #</i>	<i>Data Field</i>	<i>Details</i>
Field 1	Total annual CO ₂ emissions per State pair aggregated for all airplane operators attributed to KSA (in tons)	<i>Note. – Include emissions from CORSIA eligible fuels, calculated using fuel conversion factor(s) from corresponding aviation fuels, in accordance this E-Book, Section 7.3.4.</i>

Table 5-6. Emissions Report from GACA to ICAO annually after 2021

<i>Field #</i>	<i>Data Field</i>	<i>Details</i>
Field 1	Total annual CO ₂ emissions on each State pair aggregated for all airplane operators attributed to KSA	1.a. Total annual CO ₂ emissions on each State pair subject to offsetting requirements, as defined in GACAR 157, Subpart D, aggregated for all airplane operators attributed to KSA (in tons) 1.b Total annual CO ₂ emissions on each State pair not subject to offsetting requirements, GACAR 157, Subpart D, aggregated for all airplane operators attributed to KSA (in tons)
Field 2	Total annual CO ₂ emissions for each airplane operator attributed to KSA	2.a. Total annual CO ₂ emissions for each airplane operator attributed to KSA (in tons) 2.b Indicate whether the ICAO CORSIA CO ₂ Estimation and Reporting Tool (CERT), as defined in Appendix C, is used
Field 3	Total aggregated annual CO ₂ emissions for all State pairs subject to offsetting requirements, as defined in GACAR 157, Subpart D, for each airplane operator attributed to KSA (in tons)	
Field 4	Total aggregated annual CO ₂ emissions for all State pairs not subject to offsetting requirements, as GACAR 157, Subpart D, for each airplane operator attributed to KSA (in tons)	

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c. Note. – Information on the following fields can be found in the ICAO document entitled “CORSA Central Registry (CCR): Information and Data for Transparency” that is available from the ICAO CORSA website:

- i. Total average CO₂ emissions for 2019 and 2020 aggregated for all airplane operators on each State pair;
- ii. Total annual CO₂ emissions aggregated for all airplane operators on each State pair (with identification of State pairs subject to offsetting requirements in a given year) (Field 1); and
- iii. For each airplane operator:
 1. Airplane operator name;
 2. State in which airplane operator is attributed;
 3. Reporting year;
 4. Total annual CO₂ emissions (Field 2);
 5. Total aggregated annual CO₂ emissions for all State pairs subject to offsetting requirements, as defined in Table 3-6, (Field 3); and
 6. Total aggregated annual CO₂ emissions for all State pairs not subject to offsetting requirements, as defined in Table 3-6, (Field 4).

d. Note. – Where CO₂ emissions are based on the ICAO CORSA CO₂ Estimation and Reporting Tool as described in Appendix C, this will be indicated.

e. Note. – All data recognized as confidential in accordance with GACAR 157 §157.25(a)(6), will be aggregated and published by ICAO without attribution to a specific airplane operator. All data recognized as confidential in accordance with GACAR 157 §157.25(a)(7), will be aggregated and published by ICAO without attribution to specific State pair, but with distinction between State pairs subject to offsetting requirements, as defined in GACAR 157 Subpart D and those not subject to offsetting requirements.

f. Note. — The ICAO CORSA CERT is also made available to States to support order of magnitude check and fill any CO₂ emissions data gaps as described in GACAR § 157.29 (a)(1). Collection of data to

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develop and maintain the ICAO CO₂ estimation module used within the ICAO CORSIA CERT

17.5.5. Use of CORSIA eligible fuels in a State

Table 5-7. CORSIA eligible fuels supplementary information to the Emissions Report from GACA to ICAO

<i>Field#</i>	<i>Data Field</i>	<i>Details</i>	<i>Notes</i>
Field 1	Field 1	Field 1	
Field 2	Batch of CORSIA eligible fuel	2.a Batch number(s) of each CORSIA eligible fuel claimed 2.b Total mass of each batch of CORSIA eligible fuel claimed (in tons)	
Field 3	CORSIA eligible fuel claimed	3.a Fuel types (i.e., type of fuel, feedstock and conversion process) 3.b Total mass of the neat CORSIA eligible fuel (in tons) per fuel type being claimed by all the airplane operators attributed to KSA	<i>This would provide a total mass for each fuel type being claimed by all airplane operators attributed to KSA.</i>
Field 4	Emissions information (per fuel type)	4. Total emissions reductions claimed from the use of a CORSIA eligible fuel (in tons)	
Field 5	Emissions reductions (total)	5. Total emissions reductions claimed by all airplane operators attributed to KSA from the use of all CORSIA eligible fuel use (in tons)	

a. Note. – In order to avoid double claiming of CORSIA eligible fuels, information on the following fields can be found in the ICAO document entitled “CORSIA Central Registry (CCR): Information and Data for Transparency” that is available from the ICAO CORSIA website:

- i. Production year of the CORSIA eligible fuel claimed;
- ii. Producer of the CORSIA eligible fuel claimed;
- iii. Type of fuel, feedstock and conversion process for each CORSIA eligible fuel claimed;
- iv. Batch number(s) of each CORSIA eligible fuel claimed; and
- v. Total mass of each batch of CORSIA eligible fuel claimed.

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17.5.6.Data Gaps

- a. Data gaps occur when an airplane operator is missing data relevant for the determination of its fuel use for one or more international flights in accordance with GACAR part 157.21(a). Gaps in emissions-related data can occur due to various reasons, including irregular operations, data feed issues or critical system failures.
- b. Procedures to prevent data gaps are to be detailed in the Emissions Monitoring Plan of the airplane operator in accordance with Appendix C.
- c. A data gap could also be identified by GACA in its review of the verified Emissions Report.
- d. Airplane Operator

If the airplane operator realizes it has data gaps and system weaknesses that exceed the threshold in GACAR part §157.29(a)(1), then it must engage with GACA to take remedial action to address this.

e. GACA

If the airplane operator does not provide its annual Emissions Report in accordance with the timeline as defined in Table 2-1, then GACA will engage with the airplane operator to obtain the necessary information. If this proves unsuccessful, then GACA will estimate the airplane operator's annual emissions using the best available information and tools, such as the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) as described in GACAR 157.29 (b)(1).

If GACA does not provide its annual aggregated Emissions Report to ICAO in accordance with the timeline as defined in Table 2-1, then the data provided by ICAO must be used to fill these gaps and calculate the total sectoral CO₂ emissions in a given year and the Sectoral Growth Factor, as defined in this E-Book 7.3.3.

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17.5.7. Error correction to Emissions Reports

- a. If an error in the airplane operator's reported emissions is identified by GACA, the verification body, or the airplane operator after the reported CO₂ emissions have been submitted to GACA the airplane operator will update the reported CO₂ emissions to address the error. GACA will assess any implications with respect to the airplane operator's offsetting requirements in previous years and, if necessary, make an adjustment to compensate for the error during the compliance period in which the error has been identified.
- b. GACA will report an error in the airplane operator's CO₂ emissions and the follow-up result of the related adjustment to ICAO. No adjustments will be made to the total sectoral CO₂ emissions or the Sector's Growth Factor (SGF) as a result of error correction to Emissions Reports.
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CHAPTER 6: VERIFICATION

17.6.1. Introduction

a. Every Emissions Report and Emissions Unit Cancellation Report submitted to GACA under GACAR 157 by an airplane operator must be reviewed and verified by an independent, accredited verification organization. Every airplane operator is independently responsible for contracting with a certified verification organization to meet these requirements.

b. Every airplane operators' Emissions Reports must be verified annually by an independent accredited verification body, beginning with the Emissions Reports for 2019 data as described in GACAR 157 Subparts C and E. Each year the airplane operator is responsible for compiling its monitoring data and preparing its report immediately after the end of the monitoring period, which ends on 31 December. In the 2019-2020 period, the verification must be finalized in advance of 31 May 2020 and 30 April 2021, which is the deadline for submitting the Emissions Report and associated Verification Report to GACA. From the start of the 2021-2023 period, the deadline for submitting the Emissions Report and associated Verification Report is 30 April annually.

c. GACA recommends that each aircraft operator conduct a voluntary pre-verification of any data or report that is to be sent to the verification body. After receiving the Emissions Report and its associated date, the verification body will evaluate the accuracy and completeness of the aircraft operator's report. Subsequently the airplane operator must submit a copy of the Emissions Report and the verification body must independently submit, upon authorization by the airplane operator, an associated Verification Report. GACA will conduct an order of magnitude check of the two documents and approve the Emissions Report.

17.6.2. EMISSION MONITORING PLAN

a. As described in GACAR part §157.23, the airplane operator must draft an Emissions Monitoring Plan and submit this plan to GACA for approval. The airplane operator must monitor its emissions in accordance with the approved Emissions Monitoring Plan. If a material change is made to the Emissions Monitoring Plan or if other changes occur that could affect GACA's oversight, the airplane operator must resubmit the updated plan for approval.

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17.6.3. EMISSION REPORT

a. Based on the procedures included in the current Emissions Monitoring Plan, the airplane operator must draft an annual Emissions Report. This is the main document required by GACAR part §157.23 as it includes all relevant CO₂ emissions-related data as described in Appendix D. The Emissions Report will be verified by a verification body to demonstrate that it is free from material misstatements and material non-conformities. The verified Emissions Report will be submitted to GACA together with the Verification Report of the verification body.

17.6.4.Verification Report

a. The verification body will draft a Verification Report after the completion of verification activities as described in GACAR 157 §157.27. Both the airplane operator and the verification body, upon authorization by the airplane operator, will forward a copy of the Verification Report together with the Emissions Report to GACA. Together with the Emissions Report, GACA will review the Verification Report and may contact the airplane operator and the verification body to receive further explanation if required. The Verification Report must contain a concluding verification statement.

17.6.5.Verification Statement

a. The verification statement is a formal written declaration to GACA that provides assurance that the airplane operator's CO₂ emissions assertion is stated within the defined level of assurance and materiality as described below and is in accordance with the applicable verification criteria as described in GACAR 157 §157.27. The verification body will choose only between two types of verification statements, either 'verified as satisfactory' or 'verified as not satisfactory'.

17.6.6.ISO GHG standards as basis for GACAR 157 verification

a. The following ISO standards form the basis for GACAR 157 verification:

(1)ISO 14064-3:2006 entitled "Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions";

(2) ISO 14065:2013 entitled "Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition".

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b. ISO standards are applicable in their specific versions as shown above only. This includes potential revisions of the standards. Additional ISO standards are applicable in more general terms as well. For example, ISO 14066 provides the definition of team leader under CORSIA. The verification body will meet the verification requirements additional to these program-neutral ISO GHG standards, which are provided in this document. It is important to note that these standards have to be documented in the contract between the verification body and airplane operator as part of the conditions for verification.

17.6.7.Verification body eligibility and accreditation

a. To be eligible to undertake verification activities under GACAR 157, verification bodies must meet the following key requirements:

(1) Be accredited to ISO 14065:2013, “Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition”, for a technical scope relevant to aviation; and

(2) Satisfy the additional accreditation requirements specified in GACAR 157, including a requirement related to the maximum number of annual verifications. These are described in more detail below.

17.6.8.Accreditation framework

a. All verification bodies must be accredited to ISO 14065:2013, “Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition”, for a technical scope relevant to aviation. In addition to ISO 14065, verification bodies must also meet the additional accreditation requirements specified below. These include, but are not limited to, requirements related to avoiding conflict of interest, personnel competency and team knowledge and expertise. Verification bodies wishing to become accredited to conduct verifications under GACAR 157 must be accredited by an ICAO Member State’s national accreditation body (NAB).

b. Accreditation of verification bodies is carried out by NABs that operate in accordance with the international standard ISO/IEC 17011:2004, “Conformity Assessment - General requirements for accreditation bodies accrediting conformity assessment bodies.”

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17.6.9. Accreditation requirement

a. A number of additional accreditation requirements beyond ISO 14065:2013 are described below. Key A number of additional accreditation requirements beyond ISO 14065:2013 are described below. Key GACAR 157 specific requirements are as follows

17.6.9.1. Maximum number of annual verifications

a. Consistent with the ISO Standards 14064-3:2006 and 14065:2013, verification bodies are required to demonstrate impartiality and remain free from bias and conflict of interest at all times. To minimize the potential for a conflict of interest, GACA requires that the leader of the verification team not undertake more than six annual verifications under any greenhouse gas emissions program for the same airplane operator. After six years, the leader of the verification team will take a three consecutive year break from providing GACA verification services to the airplane operator. The six-year maximum includes verifications performed for the airplane operator prior to it requiring verification services under GACA

17.6.9.2. Personnel and team competency

a. Appendix E also specifies a number of personnel and team competency requirements in addition to the ISO standards. These relate primarily to the aviation verification engagement and the competence of the team as a whole, including documenting and evaluating team competencies and ensuring continual professional development and training for verification bodies

17.6.9.3. Confidentiality

a. Additional confidentiality requirements relate to the submission of the Verification Report to GACA. In GACAR 157, both the airplane operator and the verification body submit a copy of the Verification Report to GACA. However, before the verification body submits the Verification Report, it must have the appropriate authorization to do so from the operator. The mechanism for authorizing this consent will be specified in the contract between the verification body and airplane operator.

17.6.9.4. Recordkeeping

a. Under GACAR 157, verification bodies are required to keep full verification records for a minimum of 10 years.

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17.6.10. Verification fundamentals

17.6.10.1. Objective of the verifications

a. Verification activities under GACAR 157 ensure that monitoring CO₂ emissions takes place according to the approved Emissions Monitoring Plan (in accordance with this GACAR) and that the reported emissions are correct and reliable (free from material misstatements and material non-conformities). In accordance with this E-Book, the verification statement must provide, inter alia, a conclusion on whether:

- (1) The airplane operator CO₂ emissions assertion is materially fair and an accurate representation of emissions over the period of the Emissions Report and is supported by sufficient and appropriate evidence;
- (2) The airplane operator has monitored, calculated and reported its emissions over the period of the Emissions Report in accordance with GACAR 157 and the approved Emissions Monitoring Plan;
- (3) The airplane operator has correctly applied the method of flight attribution documented in the approved Emissions Monitoring Plan and in accordance with GACAR 157, to ensure a correct attribution of leased airplane and international flights operated by other airplane operators under the same corporate structure;
- (4) The stated amount of emission reductions from the use of CORSIA eligible fuels by the airplane operator is materially fair and an accurate representation of emission reductions over the reporting period, and is supported by sufficient and appropriate internal and external evidence;
- (5) The claimed batches of CORSIA eligible fuels from the airplane operator have not been claimed by another airplane operator under any other voluntary or mandatory schemes it has participated in (where the emission reductions from CORSIA eligible fuels may be claimed), during the current compliance period, as well as the compliance period immediately preceding it;
- (6) The airplane operator has monitored, reported and verified its emission reductions from the use of CORSIA eligible fuels use over the period of the reporting period in accordance with this GACAR;
- (7) The airplane operator has accurately reported its CORSIA Eligible Emissions Unit cancellations in accordance with GACAR 157 §157.43;
- (8) The airplane operator has quantities of cancelled CORSIA Eligible Emissions Units that are

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sufficient for satisfying the offsetting requirements associated with the relevant compliance period, after accounting for any claimed emission reductions from the use of CORSIA eligible fuels, and the airplane operator can demonstrate sole right of use to such cancelled CORSIA Eligible Emissions Units; and

(9) The airplane operator has used the cancelled CORSIA Eligible Emission Units to meet its total final CO₂ offsetting requirements for a given compliance period under GACAR 157, and not been used to offset any other emissions.

17.6.10.2.Scope of verifications

a. The scope of the verification must cover the entire reporting period as stated in the Emissions Report and is determined by the activities necessary to achieve the objective of the verification. Before a verification body can accept the verification engagement, the verification body should have developed a clear understanding of the airplane operator's activities and the complexity of the verification activities necessary.

b. The scope of the verification has to be stated and defined in the contract between the airplane operator and verification body, including necessary site visits and access to airplane operator's data

17.6.10.3.Level of assurance

a. In GACAR 157, the verification body will provide reasonable assurance that the airplane operator's Emissions Report is materially fair and an accurate representation of emissions over the period of the Emissions Report. Sufficient and appropriate evidence has to be gained through the verification process to guarantee the level of assurance and to make resilient statements about the GHG assertion in the Verification Report.

17.6.10.4.Materiality

a. GACAR 157 requires the following materiality levels:

(1) Airplane operators with annual CO₂ emissions from international flights, above 500,000 tons will meet a materiality threshold of 2 per cent.

(2) Airplane operators with annual CO₂ emissions from international flights equal or less than

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500,000 tons will meet a materiality threshold of 5 per cent.

- b. Over and understatements should be allowed to balance out in both cases.
- c. The verification activities to be undertaken by the verification body, and the data points to be sampled, can be expected to be more extensive and detailed in the case of a 2 per cent materiality level than they will for a 5 per cent materiality level. Errors, omissions and misrepresentations in the Emissions Report have to be taken into account.

17.6.11.Verification process under GACAR 157

- a. The verification process under GACAR 157 can be broken down into 12 steps involving the 3 key participants: the verification body, the airplane operator and GACA.
- b. In advance of seeking verification of its Emissions Report by a verification body, it is highly recommended that the airplane operator conducts an internal pre-verification of its Emissions Report to improve data quality and the underlying data gathering processes.
- c. As depicted in Figure 7-1 the verification process itself, as conducted by the verification body and appointed team, involves 10 steps leading up to the submission of a final Verification Report to the airplane operator and GACA. Each of these steps are described in further detail below.
- d. Following submission of the Verification Report to GACA, GACA will conduct an order of magnitude check. The order of magnitude check will follow a mandatory set of requirements to enable global consistency among States.

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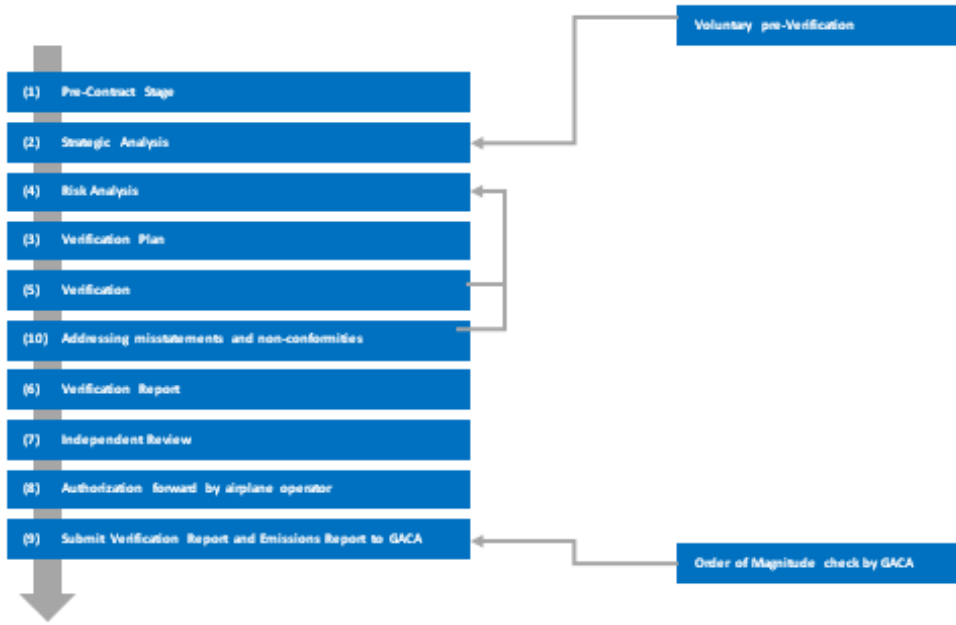


Figure 6-1: Overview of the verification process

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17.6.12. Voluntary pre-verification by the airplane operator

a. To prepare for third-party external verification, airplane operators should consider conducting a voluntary internal pre-verification to ensure there will be no large data issues during the verification. The value of a pre-verification conducted internally by the airplane operator is to ensure quality assurance and quality control of the internal data gathering process and calculation systems and ensure that the airplane operator has passed certain logic checks in advance of a verification body coming on site. The team that manages the day-to-day MRV of GACAR 157 should select an internal auditor who will be able to assess what has already been done. While the exact internal voluntary pre-verification may differ by airplane operator, the checklist included in Table 6-1 should be used as a guideline on evaluating the monitoring and reporting process.

Table 6-1. Voluntary pre-verification checklist guide

Completed by	Topic	Task	MRV2[1]	Simplified MRV3[2]
Airplane operator CORSA management team	Selecting an internal auditor	Choose a qualified internal auditor/audit team	X	X
		Ensure that the internal auditor(s) have the required knowledge and skills and is independent from the activity being audited	x	x
Internal auditor	Understand airplane operator monitoring and reporting process	Review Emissions Monitoring Plan and other relevant written procedures; data flow charts; preliminary draft Emissions Report versions; historical reports; communication with State etc.	x	x

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Internal auditor in conjunction with airplane operator CORSIA management team	Identify scope of voluntary pre-verification audit plan	Develop data sampling plan based on analysis of documents	x	x
		Confirm that data gathering, calculation and summation processes are as per procedures. It is recommended that this analysis include quantitative analysis	x	x
		Check that data sources match what has been identified in the Emissions Monitoring Plan	x	x
		If a data flow chart exists, compare it with actual data flow and identify any determined problems	x	x
Internal auditor	Evaluate staff competence	Collect information through interviews, observations of activities, review of documents	x	x
		Does airplane operator CORSIA management team have adequate knowledge of: monitoring and reporting as relating to GHG monitoring and reporting responsibilities and activities related to the CORSIA?	x	x
		Assess the different responsibilities assigned and recorded in the Emissions Monitoring Plan for MRV and if the various staff members complete those tasks correctly	x	x
		Check if responsibilities assigned to various staff have been completed	x	x

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Completed by	Topic	Task	MRV2	Simplified MRV3
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Internal auditor	Analysis to identify report for errors or logic gaps	How does the data compare to previous years?	x	x
		Adequacy of input, output, and transformation error checking routines	x	x
		Are there any inconsistencies such as empty cells or error messages?	x	x
		Check completeness of list of flights by adding logical tests and consistency checks in the report i.e. below two lines	x	x
		Is the departure aerodrome for the next flight the same as the arrival aerodrome for the previous flight?	x	x
		Correlation analysis – determination of the correlation between data and dependent variables (e.g. consistency between duration of flights and fuel use, average fuel burns)	x	x
		Intra-project analysis – comparison of data across multiple sites (e.g. consistency of data between aerodromes, is arrival fuel of the previous flight plus the recorded fuel uplift roughly the same figure as the departure fuel?)	x	x
		Management system elements in place supporting collection and reporting of emissions data	x	x
		Adequacy of reporting processes	x	x

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		for the periodic comparisons and reconciliation of emissions data with other data (e.g. comparing emission estimates against production and capacity utilization data)		
Internal auditor	Assess scope and technical exemptions	<p>Are the appropriate flights included for the CORSIA monitoring and reporting?</p> <p>Are the correct international flights subject to offsetting requirements?</p> <p>Are exempted flights recorded correctly (i.e. has a medical flight really been classified as a medical flight and are all classified medical flights real medical flights or have they been classified incorrectly?)</p>	<p>x</p> <p>x</p> <p>x</p>	<p>x</p> <p>x</p> <p>x</p>
Internal auditor	Emission sources and airplane used	Set up a checklist of emission sources / airplanes used and operated by operator	x	x
Completed by	Topic	Task	MRV2	Simplified MRV3

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Internal auditor	Emission calculation and fuel data used	Consult Emissions Monitoring Plan to determine how emissions are calculated and perform some cross checks to see if the applied calculation works by adding logics to the report	x	x
			x	x
			x	x
			x	
		If based on real fuel figures, cross-check how those are recorded and if this has been done correctly or if there are any recurring error sources e.g. below	x	
		Calculate if the arrival fuel of the previous flight plus the recorded fuel uplift are roughly the same figure as the departure fuel		
	Cross check if two equal fuel uplifts have been recorded for two or more consecutive flights and if those are genuine or typing errors			
	Check report for very low/high fuel uplifts/figures to see if those are correct or typos			

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	Aviation fuel to CO ₂ conversion; fuel density; CORSIA eligible fuel factors	Aviation fuel's fuel to CO ₂ conversion factor used correctly Check if the fuel density process in the Emissions Monitoring Plan has been consistently applied for all flights Check if any volume of CORSIA eligible fuel has been used and if those have been certified as being eligible in the CORSIA	x x x	
Internal auditor	Pre-verification audit documentation	Record complete list of voluntary pre-verification findings including: Recommended/required actions Timeline for closure of finding Follow up checks by auditor to ensure corrective actions have been completed satisfactorily and findings are closed	x x x x	x x x
Airplane operator CORSIA day-to-day management team	Execute corrective actions	Evaluate list of findings and execute corrective actions to prepare for external third-party verification by verification body	x	x

17.6.13. Misstatements and non-conformities

a. In general, two types of issues might appear in the process of verification: misstatements and non-conformities. A misstatement is an error, omission or misrepresentation in the airplane operator's

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Emissions Report while a non-conformity signifies any act or omission of an act that is not in accordance with the requirements in the Emissions Monitoring Plan approved by GACA. A non-conformity may cause a misstatement if this non-conformity leads to errors, omissions or misrepresentations in the reported data.

b. Examples for misstatements within GACAR 157:

- (1) Missing flights in the sequence of flights;
- (2) Non-addressed data gaps such as missing block-on fuel value or missing fuel uplift; and
- (3) Implausible data such as fuel uplifts larger than tank capacity, higher block-on fuel than block-off fuel, noticeably higher or lower fuel burn per flight in comparison to an average fuel burn, distinct patterns of applying standard density or filling data gaps, wrong units, etc.

c. Examples for non-conformities within GACAR 157:

- (1) Incorrect application of the Fuel Use Monitoring Method;
- (2) Incorrect application of the ICAO CORSIA CERT to estimate CO₂ emissions;
- (3) Incorrect version of the Emissions Monitoring Plan used to draft Emissions Report; and
- (4) Required quality procedures not respected

[\[1\]](#) Fuel Use Monitoring Method, as described in Appendix B

[\[2\]](#) CORSIA CO₂ Estimation and Reporting Tool (CERT), as described in Appendix D.

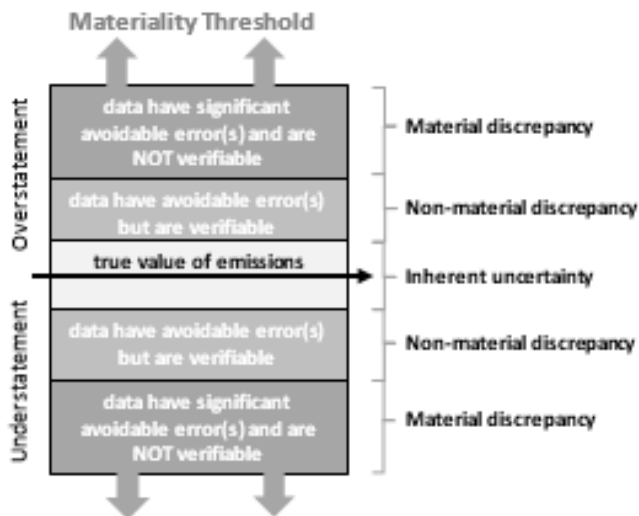
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17.6.14. Assessing materiality

- a. Similar to other GHG schemes, materiality refers in GACAR 157 to the concept that individual misstatements and non-conformities, or the aggregation of them, could affect the correct amount of CO₂ emissions stated in the Emissions Report. A specific piece of information is considered to be material if, by its inclusion or exclusion, it can influence the emissions calculation or actions or decisions taken based on it. In other words, materiality is linked to the quality of the Emissions Report and therefore its acceptance.
- b. The concept of materiality is included in all major GHG reporting methods and initiatives although some use slightly different terminology.
- c. To reach an opinion on reported data or information, a verification body needs to form a view on the materiality of all identified misstatements and non-conformities. This is usually performed at the end of the whole verification process, and before drafting the verification statement. In the materiality assessment procedure all findings are evaluated and an analysis on any misstatements and non-conformities is conducted.

17.6.4.1. Materiality threshold

- a. The materiality threshold establishes an acceptable percentage discrepancy between the declared amount of emissions in the Emissions Report and the verification body’s estimation of the total amount of emissions. It is the point at which a discrepancy becomes material and therefore can influence any actions or decision taken. Figure 6-2 illustrates the materiality threshold concept in this context.



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Figure 6-2: Illustration of the materiality threshold concept in the context of verification

- a. When preparing a verification, this threshold must be defined in advance and serves as an indicator to the verification body to decide upon the question of whether a definitive conclusion can be drawn to provide a verification statement. It is important to note that a materiality threshold is not a permissible quantity of emissions that a company can exclude from its inventory.
- b. In the context of GACAR 157, misstatements and non-conformities (including errors, omissions and misrepresentations) relate to all information that an airplane operator is required to submit in the Emissions Report. When misstatements in the data are present, additional information is required from the operator to resolve the issue. This information should be verifiable to confirm that any corrections made are valid. Otherwise, any misstatements and/or nonconformities must be evaluated as part of the materiality assessment to determine if, in aggregate, they exceed the defined materiality threshold.
- c. Non-conformities can have some overlap with misstatements irrespective of whether they have a material effect. A material non-conformity is not dependent on the materiality threshold, but more on whether it directly affects the calculation of emissions or whether it is a more technical non-compliance such as an incomplete procedure, missing signature etc.

17.6.14.2. Application of the materiality threshold in GACAR 157

- a. The following example shows how a verification body can calculate whether the materiality level has been exceeded. In this simplified example the Emissions Report contains only three flights.

Table 6-2: Illustration of calculation of materiality levels

<i>Item</i>	<i>Verification</i>	<i>Reported value</i>	<i>Verification body's value</i>	<i>Difference</i>	<i>Material?</i>
Flight 1	Incorrect fuel uplift	A	B	A-B=C	C/Z%
Flight 2	Correct	F	F	F-F=0	0%
Flight 3	Incorrect block-on fuel	I	J	I-J=K	K/Z%
Total		Z	X	Z-X=Y	Y/Z%

- b. If the difference in value (error) between the airplane operator's reported value and the verification body's value is negative, then the original reported value was understated. If the difference value is positive, the original reported value was overstated. The total aggregated values of all differences (i.e.

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positive and negative values) is used by the verification body to assess whether the defined materiality threshold is exceeded or not.

c. On another example that regards flight information, the verification body can recreate an internal version of the report provided by the company using external information (e.g. information based on traffic recorded by air navigation service providers and invoiced to airline). The discrepancies between the verification body's report and the airplane operator's report are then assessed.

17.6.14.3.Limitations of the concept

a. Professional judgment must be exercised when evaluating the significance of issues with regards to materiality. This requires the verification body to have relevant knowledge and experience. This is important especially as misstatements and non-conformities can have a qualitative nature which means that it very much depends on the specific circumstances and the professional judgment of a verification body whether a misstatement or a non-conformity has material effect. In specific situations the materiality threshold might not be exceeded, however, the issues still might influence the decision of GACA whether the Emissions Report can be accepted or not. This might be the case if the airplane operator does not follow the procedures of the approved Emissions Monitoring Plan or the GACAR 157 §157.25, or if systematic underestimation of emissions below the materiality threshold have taken place for several Emissions Reports submissions

17.6.15.Completing the Verification Report and statement

a. If the Emissions Report includes non-material misstatement and/or non-material non-conformities, the Emissions Report will be 'verified as satisfactory with comments', clearly specifying the misstatements and non-conformities and confirming that these are non-material. This can be done in a list including an indication whether the root cause for a misstatement or non-conformity had been existing in previous reporting years as well.

b. If the Emissions Report contains material misstatements and/or material non-conformities or if the scope of the verification is too limited or the verification body is not able to obtain sufficient confidence in the data, the Emissions Report will be 'verified as not satisfactory'. In such cases it is recommended that the verification body advises the airplane operator to immediately contact GACA. Potential examples for situations where the scope of verification is too limited are listed below:

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(1)Sufficient access to relevant information of the airplane operator is not granted or relevant information is not available; or

(2)There is no Emissions Monitoring Plan available, or the Emissions Monitoring Plan does not contain sufficiently precise information (e.g., on the data gathering processes such that it remains unclear on which processes data contained in the Emissions Report is based).

17.6.16. After the verification

17.6.16.1. Facts discovered after the verification

a. Issues may come to the attention of the verification body that render a previously issued verification statement invalid or inaccurate. Although verification bodies are not required to actively monitor the validity of their verification statements after they are issued, where such issues are brought to the attention of the verification body, it must implement procedures to respond in accordance with ISO 14064-3 and ISO 14065. The verification body should also notify GACA of the issue.

17.6.16.2.Records management

a. If GACA becomes aware that a previously issued verification statement is rendered invalid or inaccurate, then GACA may request access to the internal verification documentation on a confidential basis.

17.6.17.Verification body

a. The verification body must be accredited to ISO 14065:2013, and meet the following additional requirements to be eligible to verify the Emissions Report, and the Emissions Unit Cancellation Report where applicable, of an airplane operator. The following documents should be used as normative references that provide guidance for the application of this E-book:

(1)Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA);

(2)The International Accreditation Forum (IAF) document entitled, “IAF Mandatory Document for the Application of ISO 14065:2013 (IAF MD 6:2014)”; and

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(3)The International Organization for Standardization (ISO) document entitled, “ISO 14066:2011 Greenhouse gases – Competence requirements for greenhouse gas validation team and verification teams”.

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17.6.18.Verification of Emissions Report and Emissions Unit Cancellation Report

a. The verification team must conduct the verification according to ISO 14064-3:2006, and the following additional requirements.

17.6.18.1.Level of assurance (ISO 14064-3:2006 section 4.3.1)

a. A reasonable level of assurance must be required for all verifications under this E-Book.

17.6.18.2.Objectives (ISO 14064-3:2006 section 4.3.2)

a. When conducting the verification of an Emissions Report, the verification body must perform sufficient procedures to conclude whether:

(1)The greenhouse gas assertion is materially fair and an accurate representation of emissions over the period of the Emissions Report and is supported by sufficient and appropriate evidence;

(2)The airplane operator has monitored, quantified and reported its emissions over the period of the Emissions Report in accordance with this E-Book and the approved Emissions Monitoring Plan;

(3)The airplane operator has correctly applied the method of flight attribution documented in the approved Emissions Monitoring Plan and in accordance with Section 2 of this E-Book, to ensure a correct attribution of leased airplane and international flights, as defined in Section 2.1 (a) of this E-Book, operated by other airplane operators under the same corporate structure;

(4)The stated amount of emissions reductions from the use of CORSIA eligible fuels is materially fair and an accurate representation of emissions reductions over the reporting period, and is supported by sufficient and appropriate internal and external evidence;

(5)The claimed batches of CORSIA eligible fuels have not also been claimed by the airplane operator under any other voluntary or mandatory schemes it has participated in (where the emissions reductions from CORSIA eligible fuels may be claimed), during the current compliance period, as well as the compliance period immediately preceding it; and

(6)The airplane operator has monitored, calculated and reported its emissions reductions associated from the use of CORSIA eligible fuels over the period of the reporting period in accordance with this E-Book.

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b. When conducting the verification of an Emissions Unit Cancellation Report, the verification body must perform sufficient procedures to conclude whether:

(1) The airplane operator has accurately reported cancellations of its CORSIA Eligible Emissions Units in accordance with this E-Book;

(2) The stated number of cancelled CORSIA Eligible Emissions Units is sufficient for meeting the airplane operator's total final offsetting requirements associated with the relevant compliance period, after accounting for any claimed emissions reductions from the use of CORSIA eligible fuels, and the airplane operator can demonstrate sole right of use to such cancelled CORSIA Eligible Emissions Units; and

(3) The eligible emissions units cancelled by the airplane operator to meet its offsetting requirements under this Volume have not been used by the airplane operator to offset any other emissions.

17.6.18.3. Scope (ISO 14064-3:2006 section 4.3.4)

a. When conducting the verification of an Emissions Report, the scope of the verification must reflect the period of time and information covered by the report and the CORSIA eligible fuels claim(s) where applicable. This includes:

(1) CO₂ emissions from airplane fuel monitoring methods, calculated in accordance with Appendix B of this E-book; and

(2) Emissions reductions from the use of CORSIA eligible fuel(s).

b. The scope of the verification of the CORSIA eligible fuel claim(s) in the Emissions Report must include the following:

(1) Any internal airplane operator procedures for CORSIA eligible fuels, including airplane operator controls to ensure the claimed CORSIA eligible fuels satisfies the CORSIA Sustainability Criteria;

(2) Checks for double claiming are limited to the specific airplane operator. Any findings outside of this scope are not relevant for the verification statement, however they should still be included in

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the Verification Report for further consideration by GACA;

(3) Assessment of verification risk with appropriate changes to the verification plan; and

(4) Assessment of whether there is sufficient access to relevant internal and external information to obtain sufficient confidence in each CORSIA eligible fuel claim. Where evidence of the sustainability or the size of the CORSIA eligible fuels claim is considered either inappropriate or insufficient, further information should be sought directly from the fuel producer with direct access facilitated through the airplane operator.

c. When conducting the verification of an Emissions Unit Cancellation Report, the scope of the verification must reflect the period of time and information covered by the report and the verification body must confirm that the cancelled eligible emissions units used to meet the airplane operator's offsetting requirements under E-book 157-01 have not been used to offset any other emissions.

17.6.18.4. Materiality (ISO 14064-3:2006 section 4.3.5)

a. When conducting the verification of an Emissions Report, the verification body must apply the following materiality thresholds:

(1) Of 2 per cent for airplane operators with annual emissions on international flights above 50,000 tons; and

(2) Of 5 per cent for airplane operators with annual emissions on international flights equal or less than 500,000 tons of CO₂.

b. When conducting the verification of an Emissions Report, the over and understatements in Section 6.10.4 b. of this E-Book must be allowed to balance out in both cases.

17.6.18.5. General (ISO 14064-3:2006 section 4.4.1)

a. Prior to the development of the verification approach, the verification body must assess the risk of misstatements and non-conformities and their likelihood of a material effect on the basis of a strategic analysis of the airplane operator's greenhouse gas emissions information [\[1\]](#). Depending on the information obtained during the verification, the verification body must revise the risk assessment and modify or repeat the verification activities to be performed.

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17.6.18.6. Validation or verification plan (ISO 14064-3:2006 section 4.4.2)

a. The verification team must prepare the verification plan on the basis of the strategic analysis and assessment of risks. The verification plan must include a description of the verification activities for each variable that has a potential impact on the reported emissions. The verification team must consider the assessment of risk, and the requirement to deliver a verification opinion with reasonable assurance, when determining sample size. The verification plan must include the following:

- (1) Verification team members, roles, responsibilities and qualifications;
- (2) Any external resources required;
- (3) Schedule of verification activities; and
- (4) Sampling plan, including the processes, controls and information to be verified and details of the risk assessment conducted to identify these.

17.6.18.7. Sampling plan (ISO 14064-3:2006 section 4.4.3)

a. The Emissions Report sampling plan must include the following:

- (1) Number and type of records and evidence to be examined;
- (2) Methodology used to determine a representative sample; and
- (3) Justification for the selected methodology.

b. When conducting the verification of an Emissions Unit Cancellation Report, the verification body must not rely on sampling.

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17.6.18.8. Assessment of GHG data and information (ISO 14064-3:2006 section 4.6)

- a. The verification team must confirm that the Emissions Report data has been collected in accordance with the approved Emissions Monitoring Plan and monitoring requirements specified in this E-book.
- b. In accordance with the Emissions Report sampling plan, the verification body must carry out substantive data testing consisting of analytical procedures and data verification to assess the plausibility and completeness of data. The verification team must, as a minimum, assess the plausibility of fluctuations and trends over time or between comparable data items as well as identify and assess immediate outliers, unexpected data, anomalies, and data gaps.
- c. Depending on the outcome of Emissions Report data testing and assessment, the assessment of risk, verification and sampling plans must be amended, where necessary.

17.6.18.9. Evaluation of the GHG assertion (ISO 14064-3:2006 section 4.8)

- a. The verification body must use an independent reviewer not involved in the verification activities to assess the internal verification documentation, and the Verification Report, prior to its submission to the airplane operator and State.
- b. The independent review, whose scope includes the complete verification process, must be recorded in the internal verification documentation.
- c. The independent review must be performed to ensure that the verification process has been conducted in accordance with ISO 14065:2013, ISO 14064-3:2006 and this E-Book, and that the evidence gathered is appropriate and sufficient to enable the verification body to issue a Verification Report with reasonable assurance.

17.6.18.10. Validation and verification statement (ISO 14064-3:2006 section 4.9)

- a. The verification body must submit a copy of the Verification Report to the airplane operator. Upon authorization by the airplane operator, the verification body must forward a copy of the Verification Report together with the Emissions Report, the Emissions Unit Cancellation Report, or both, to GACA. The Verification Report must include:

- (1) Names of the verification body and verification team members;

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- (2) Time allocation (including any revisions and dates);
- (3) Scope of the verification;
- (4) Main results of impartiality and avoidance of conflict of interest assessment;
- (5) Criteria against which the Emissions Report was verified;
- (6) Airplane operator information and data used by the verification body to cross-check data and carry out other verification activities;
- (7) Main results of the strategic analysis and assessment of risk;
- (8) Description of verification activities undertaken, where each was undertaken (on-site vs off-site) and results of checks made on the CO₂ emissions information system and controls;
- (9) Description of data sampling and testing conducted, including records or evidence sampled, sample size, and sampling method(s) used;
- (10) The results of all data sampling and testing, including cross-checks;
- (11) Compliance with the Emissions Monitoring Plan;
- (12) Any non-compliances of the Emissions Monitoring Plan with E-book;
- (13) Non-conformities and misstatements identified (including a description of how these have been resolved);
- (14) Conclusions on data quality and materiality;
- (15) Conclusions on the verification of the Emissions Report;
- (16) Conclusions on the verification of the Emissions Unit Cancellation Report;
- (17) Justifications for the verification opinion made by the verification body;
- (18) Results of the independent review and the name of the independent reviewer; and
- (19) Concluding verification statement.

b. When conducting the verification of an Emissions Unit Cancellation Report, only section X (a)(1), (2),

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(3), (4), (6), (7), (8), (13), (16), (17), (18) and (19) (above) must be applicable.

c. The verification body must provide a conclusion on each of the verification objectives listed in Section 6.18.2 of this E-Book, as applicable, in the concluding verification statement.

d. When conducting the verification of an Emissions Report or an Emissions Unit Cancellation Report, the verification body must choose between two types of verification opinion statements, either 'verified as satisfactory' or 'verified as not satisfactory'. If the report includes non-material misstatements and or non-material non-conformities, the report must be 'verified as satisfactory with comments', specifying the misstatements and non-conformities. If the report contains material misstatements and /or material non-conformities, or if the scope of the verification is too limited or the verification body is not able to obtain sufficient confidence in the data, then the report must be 'verified as not satisfactory'.

17.6.18.11. Validation or verification records (ISO 14064-3:2006 section 4.10)

a. On request from GACA, the verification body must disclose the internal verification documentation on a confidential basis to GACA.

b. Where issues that may render a previously issued verification statement invalid or inaccurate are brought to the attention of the verification body, then it must notify GACA.

[1] Definitions of strategic analysis and the assessment of risks are contained in the IAF Mandatory Document for the Application of ISO 14065: 2013, Issue 2 (IAF MD 6:2014)

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CHAPTER 7: GUIDELINES ON Calculating OFFSETTING REQUIREMENTS

17.7.1. Introduction

- a. The information presented in this Chapter illustrates the calculations of CO₂ offsetting requirements, as described in GACAR 157, Subpart D: “CO₂ offsetting requirements from international flights and emissions reductions from the use of CORSIA eligible fuels”.
- b. GACA will notify ICAO of their decision to voluntarily participate, or to discontinue the voluntary participation in CORSIA, for the purpose of the inclusion of the State in the ICAO document entitled “CORSIA States for Chapter 3 State Pairs”, according to the timeline described in Table A-9.
- c. GACA will calculate the annual airplane operator’s final CO₂ offsetting requirements based on the data reported in accordance with emissions monitoring, reporting, and verification as well as offsetting requirements of GACAR 157 and the use of CORIS eligible fuels where applicable.

17.7.2. Scope of applicability for offsetting requirements

- a. According to GACAR Part 157, Subpart D, 157.33, offsetting requirements are applicable to the international flights that have been conducted by an airplane operator on the following State pairs:

(1) *Between 2021 and 2026*: international flights between States that decide to voluntarily participate in the scheme.

(2) *Between 2027 and 2035*: international flights between States that meet the following criteria (or have decided to voluntarily participate in the scheme):

- i. An individual share of international aviation activities in RTKs in year 2018 above 0.5 per cent of total RTKs; or
- ii. Whose cumulative share in the list of States from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs.

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(3) International flights between State pairs which include Least Developed Countries (LDCs),

(4) Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) are not within the applicability scope of the offsetting requirements, unless the State decides to voluntarily participate.

17.7.3. CO₂ Emissions from 2019-2020 for Calculating Offset Requirements

17.7.3.1. Changes in States participating within CORSIA

a. The ICAO document entitled “CORSA States for Chapter 3 State Pairs,” which is available on the ICAO CORSIA website, will be updated on an annual basis. This will define the State pairs that have offsetting requirements within CORSIA, and the associated average total sectoral CO₂ emissions during 2019 and 2020 on those State pairs

17.7.3.2. Mergers and acquisition of airplane operators

a. Where there is a complete acquisition of an airplane operator or a complete merger of two or more airplane operators the reference CO₂ emissions in the 2019-2020 period for the resulting airplane operator should be the sum of the reference CO₂ emissions in the 2019-2020 period that had been attributed to the acquired or merged entities. In all other cases, including partial acquisitions, where the airplane operator is deemed not eligible to the new entrant status, the reference CO₂ emissions in the 2019-2020 period should remain unchanged.

17.7.3.3. Sector’s Growth Factor

a. Based on the reported CO₂ emissions data from States, ICAO will calculate the Sector’s Growth Factor (SGF_y) every year. To calculate offset requirements, GACA will use the SGF_y for a given year as defined in the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”, which is available from the ICAO CORSIA website.

(1) CO₂ Emissions Computation. The airplane operator using a Fuel Use Monitoring Method, as defined in Appendix C of GACAR 157, must determine the CO₂ emissions from international flights using the following equation:

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$$CO_2 = \sum_f M_f * FCF_f$$

where:

CO_2 = CO₂ emissions (in tons);

M_f = Mass of fuel f used (in tons); and

FCF_f = Fuel conversion factor of given fuel f, equal to 3.16 (in kg CO₂/kg fuel) for Jet-A fuel / Jet-A1 fuel and 3.10 (in kg CO₂/kg fuel) for AvGas or Jet-B fuel.

b. For the purpose of calculating CO₂ emissions, the mass of fuel used includes all aviation fuels.

(1)GACA will calculate the amount of CO₂ emissions required to be offset in a given year from 1 January 2021 to 31 December 2023 for each of the airplane operators attributed to it as follows (prior to consideration of the CORSIA eligible fuels):

$$OR_y = OE * SGF_y$$

where:

OR_y = Airplane operator's offsetting requirements in the given year y;

OE = Airplane operator's CO₂ emissions covered by AC 157-01 in the given year, which will be applied to all airplane operators; and

SGF_y = Sector's Growth Factor.

c. The Sector's Growth Factor applicable for a given year (SGF_y) is provided in the ICAO document entitled "CORSIA Annual Sector's Growth Factor (SGF)," which is available from the ICAO CORSIA

website, and is calculated as $\frac{(SE_y - SE_{B,y})}{SE_y}$, where SE_y = Total sectoral CO₂ emissions covered by E-book 157-01 in the given year y and $SE_{B,y}$ = Average total annual sectoral CO₂ emissions during 2019 and 2020 covered by E-book 157-01 in the given year y. Sectoral emissions in a given year (SE_y) do not include the CO₂ emissions from new entrants during their exception period, as defined in Section 1.3.

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d. As the States that form the “CORSA States for Chapter 3 State Pairs”, as defined by Section 3.1, change over time, the average total annual sectoral CO₂ emissions during 2019 and 2020 covered by these State pairs in the given year y will be recalculated.

(1)GACA will calculate, for each of the airplane operators attributed to KSA, the amount of CO₂ emissions required to be offset in a given year from 1 January 2024 to 31 December 2035 prior to consideration of the CORSA eligible fuels, every year as follows:

$$OR_y = \%S_y * (OE_y * SGF_y) + \%O_y * (OE_y * OGF_y)$$

where:

OR_y = Airplane operator’s offsetting requirements in the given year y;

OE_y = Airplane operator’s CO₂ emissions in the given year y;

%S_y = Per cent Sectoral emissions growth in the given year y;

%O_y = Per cent Individual emissions growth in the given year y where %O_y = (100% - %S_y);

SGF_y = Sector’s Growth Factor; and

OGF_y = Airplane operator’s Growth Factor.

(2) GACA will use the Sector Growth Factor applicable for a given year (SGF_y) in the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)” that is available from the ICAO CORSA website. This information will be produced in accordance with the timeline as defined in Appendix A.

(3) GACA will calculate, when applicable, the airplane operator’s Growth Factor for a given year (OGF_y) in accordance with the CO₂ emissions from the verified Emissions Reports submitted by airplane operators attributed to it, as follows:

$$OGF_y = \frac{(OE_y - OE_{B,y})}{OE_y}$$

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where:

OE_y = Total airplane operator's CO₂ emissions covered by 157.1 in the given year y; and

$OE_{B, y}$ = Average total annual airplane operator's CO₂ emissions during 2019 and 2020 covered by 157.1 in the given year y.

(4) GACA will, upon calculating the offsetting requirements in a given year (OR_y) of each of the airplane operators attributed to it, inform the airplane operator of its offsetting requirements according to the timeline as defined in Appendix A.

17.7.3.4. Emissions reductions from the use of CORSIA eligible fuels

a. The airplane operator that intends to claim emissions reductions from the use of CORSIA eligible fuels in a given year must compute emissions reductions as follows:

$$ER_y = FCF * \left[\sum_f MS_{f,y} * \left(1 - \frac{LS_f}{LC} \right) \right]$$

where:

ER_y = Emissions reductions from the use of CORSIA eligible fuels in the given year y (in tons);

FCF = Fuel conversion factor, equal to 3.16 kg CO₂/kg fuel for Jet-A fuel / Jet-A1 fuel and 3.10 kg CO₂/kg fuel for AvGas or Jet-B fuel;

$MS_{f, y}$ = Total mass of a neat CORSIA eligible fuel claimed in the given year y (in tons), as described and reported in Field 12.b in Table 5-1 CORSIA Eligible Fuels Claimed from Appendix D of GACAR 157

LS_f = Life cycle emissions value for a CORSIA eligible fuel (in gCO₂e/MJ);

LC = Baseline life cycle emissions values for aviation fuel, equal to 89 gCO₂e/MJ for jet fuel and equal to 95 gCO₂e/MJ for AvGas.

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b. The ratio $\left(1 - \frac{LS_f}{LC}\right)$ is also referred to as the emissions reduction factor (ERF_f) of a CORSIA eligible fuel. For each of the CORSIA eligible fuels claimed, the total mass of the neat CORSIA eligible fuel claimed in the given year y needs to be multiplied by its emissions reduction factor (ERF_f). Then the quantities are summed for all CORSIA eligible fuels.

(1) If a Default Life Cycle Emissions value is used, then the airplane operator must use the ICAO document entitled “CORSA Default Life Cycle Emissions Values for CORSIA Eligible Fuels” that is available on the ICAO CORSIA website for the calculation in GACAR 157 §157.35 (a)

(2) If an Actual Life Cycle Emissions value is used, then an approved Sustainability Certification Scheme must ensure that the methodology, as defined in the ICAO document entitled “CORSA Methodology for Calculating Actual Life Cycle Emissions Values” that is available on the ICAO CORSIA website, has been applied correctly.

17.7.3.5. Total final CO₂ offsetting requirements for a given compliance period with emissions reductions from the use of CORSIA eligible fuels

a. The amount of CO₂ emissions required to be offset by the airplane operator, after taking into account emissions reductions from the use of CORSIA eligible fuels in a given compliance period from 1 January 2021 to 31 December 2035, will be calculated by GACA as follows:

$$FOR_c = (OR_{1,c} + OR_{2,c} + OR_{3,c}) - (ER_{1,c} + ER_{2,c} + ER_{3,c})$$

where:

FOR_c = Airplane operator’s total final offsetting requirements in the given compliance period c;

OR_{y,c} = Airplane operator’s offsetting requirements in the given year y (where y = 1, 2 or 3) of the compliance period c; and

ER_{y,c} = Emissions reductions from the use of CORSIA eligible fuels in the given year y (where y = 1, 2 or 3) of the compliance period c.

b. If the airplane operator’s total final offsetting requirements during a compliance period (i.e., FOR_c) is negative, then the airplane operator has no offsetting requirements for the compliance period. These negative offsetting requirements may not be carried forward to subsequent compliance periods.

c. The airplane operator’s total final offsetting requirements during a compliance period (i.e., FOR_c) must

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be rounded up to the nearest ton of CO₂.

d. GACA will, upon calculating the total final offsetting requirements for a given compliance period of each of the airplane operators attributed to it, inform the airplane operator of its total final offsetting requirements according to the timeline as defined in Appendix A of GACAR 157.

17.7.4. Calculating Offset Requirements During the 2021-2029 Compliance Periods

17.7.4.1. Case of 2021-2023 period

a. Figure 7-1 shows how GACA will calculate an airplane operator's annual offsetting requirements during the 2021-2023 period (i.e., in 2023 for the purpose of illustration).

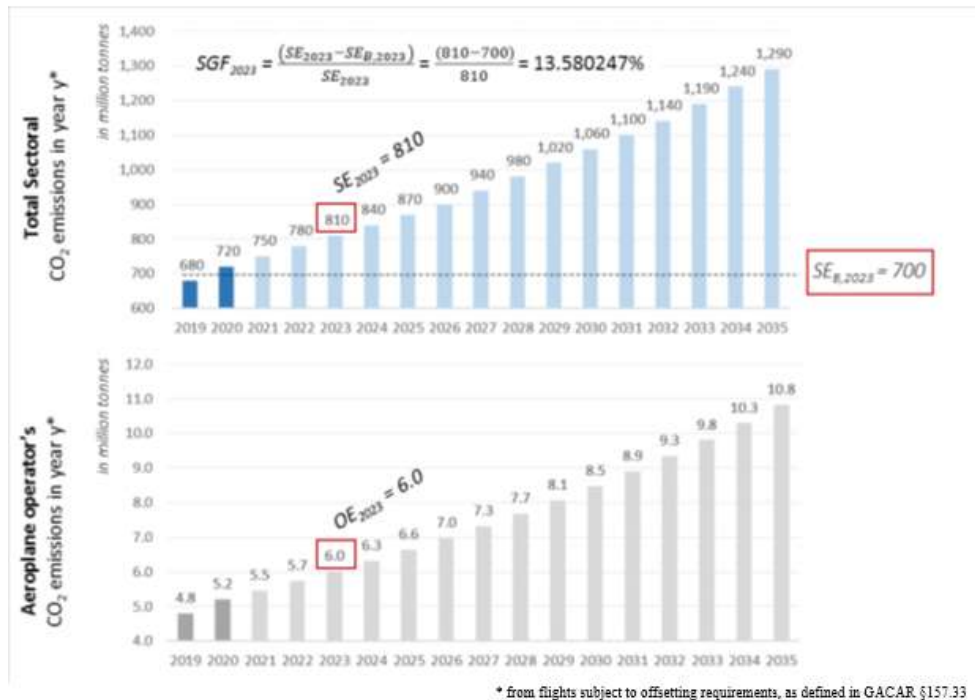


Figure 7-1. Illustration of calculation of an airplane operator's annual offsetting requirements during the 2021-2023 period (i.e., in 2023).

$$OR_{2023} = OE_{2023} * SGF_{2023} = 6,000,000 \text{ tons} * 13.580247\% = 814,815 \text{ tons}$$

where:

- OR_y = Airplane operator's offsetting requirements in the given year y;
- OE_y = Airplane operator's CO₂ emissions covered by GACAR §157.33 in the given year y; and
- SGF_{y,l} = Sector's Growth Factor.

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17.7.4.1. Case of 2024-2029 period

a. Figure 7-2 shows how GACA would calculate an airplane operator's annual offsetting requirements during the 2024-2029 period (i.e., in 2026 for the purpose of illustration).

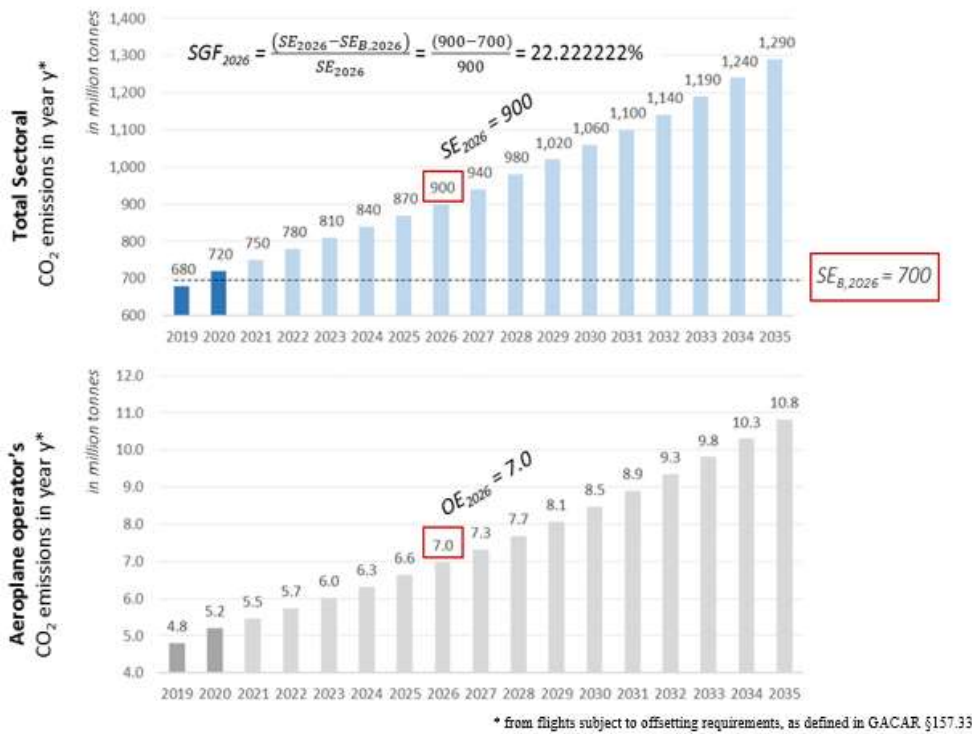


Figure 7-2. Illustration of calculation of an airplane operator's annual offsetting requirements during the 2024-2029 period (i.e., in 2026 for the purpose of illustration)

$$OR_{2026} = OE_{2026} * SGF_{2026} = 7,000,000 \text{ tons} * 22.222222\% = 1,555,556 \text{ tons}$$

where:

- OR_y = Airplane operator's offsetting requirements in the given year y;
- OE_y = Airplane operator's CO₂ emissions covered by GACAR §157.33 in the given year y; and
- SGF_y = Sector's Growth Factor.

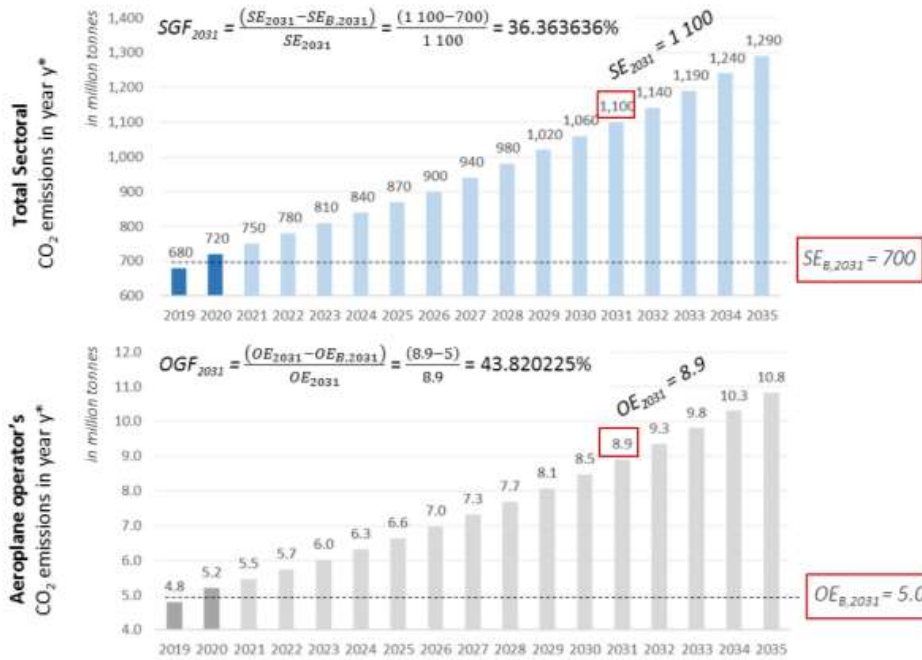
17.7.5. Calculating Offsetting Requirements During the 2030-2035 Compliance Periods

17.7.5.1. Case of 2030-2035 period

a. Figure 7-3 shows how GACA will calculate an airplane operator's annual offsetting requirements

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during the 2030-2035 period (i.e., in 2031 for the purpose of illustration).



* from flights subject to offsetting requirements, as defined in GACAR §157.33

Figure 7-3. Illustration of calculation of an airplane operator's annual offsetting requirements during the 2030-2035 period (i.e., in 2031 for the purpose of illustration)

$$OR_{2031} = \%S_{2031} + (OE_{2031} * SGF_{2031}) + \%O_{2031} * (OE_{2031} * OGF_{2031})$$

$$OR_{2031} = \%S_{2031} * (8,900,000 \text{ tons} * 36.363636\% + \%O_{2031} * (8,900,000 * 43.820225\%)) = 3,900,000 \text{ tons}$$

where:

- OR_y = Airplane operator's offsetting requirements in the given year y;
- OE_y = Airplane operator's CO₂ emissions covered by GACAR §157.33 in the given year y;
- %S_y = percent Sectoral in the given year y;
- %O_y = percent individual in the given year y where %O_y = (100% - %S_y);
- SGF_y = Sector's Growth Factor; and
- OGF_y = Airplane operator's growth factor.

• Note – the specified percentage will be determined by the ICAO Assembly in 2028.

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CHAPTER 8: Emission Units

17.8.1. Cancelling CORSIA Eligible Emissions Units

a. The airplane operator must meet its offsetting requirements according to GACAR 157, §157.33 (d), as calculated by GACA, by cancelling CORSIA Eligible Emissions Units in a quantity equal to its total final offsetting requirements for a given compliance period (i.e., FORc). “Cancel” means the permanent removal and single use of a CORSIA Eligible Emissions Unit within a CORSIA Eligible Emissions Unit Program designated registry such that the same emissions unit may not be used more than once. This is sometimes also referred to as “retirement”, “cancelled”, “cancelling” or “cancellation”. The CORSIA Eligible Emissions Units are only those units described in the ICAO document entitled “CORSIA Eligible Emissions Units”, which meet the CORSIA Emissions Unit Eligibility Criteria contained in the ICAO document entitled “CORSIA Emissions Unit Eligibility Criteria”. These ICAO documents are available on the ICAO CORSIA website.

b. To fulfill the emission unit cancellation requirements, the airplane operator must:

(1) Cancel such CORSIA Eligible Emissions Units within a registry designated by a CORSIA Eligible Emissions Unit Program in accordance with the timeline as defined in Appendix A; and

(2) Request each CORSIA Eligible Emissions Unit Program registry make visible on the registry’s public website, information on each of the airplane operator’s cancelled CORSIA Eligible Emissions Units for a given compliance period. Such information for each cancelled CORSIA Eligible Emissions Unit must include the consolidated identifying information in Field 5 of Table A8-1, except fields 5.j, 5.k

17.8.2. Reporting emissions unit cancellation

a. The airplane operator must report to GACA, the cancellation of CORSIA Eligible Emissions Units carried out in accordance with section 8.1 (b) of this E-book to meet its total final offsetting requirements for a given compliance period, by submitting to GACA a copy of the verified Emissions Unit Cancellation Report for approval and a copy of the associated Verification Report. The Emissions Unit Cancellation

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Report must contain information using the required fields defined in Table 8-1 in this E-Book and must be submitted to GACA according to the timeline as defined in GACAR 157 Appendix A.

b. GACA will report to ICAO in accordance with the timeline as defined in Appendix A. This report will contain the information as defined in Table 8.2 in this E-Book using an ICAO approved form.

c. GACA will publish the following information, once submitted to ICAO, for a given compliance period:

(1) Total final offsetting requirements over the compliance period for each airplane operator attributed to the KSA;

(2) Total quantity of emissions units cancelled over the compliance period by each airplane operator to reconcile the total final offsetting requirements, as reported by each airplane operator attributed to the KSA.

17.8.3. Verification of Emissions Unit Cancellation Report

a. The airplane operator must engage a verification body for the verification of its Emissions Unit Cancellation Report. The airplane operator may choose to use the same verification body engaged for the verification of its Emissions Report, although it is not obligated to do so.

b. The verification body must be accredited to ISO 14065:2013 and the relevant requirements in GACAR 157 Appendix F to be eligible to verify the Emissions Unit Cancellation Report of an airplane operator. The verification body shall conduct the verification according to ISO 14064-3:2006, and as described in Section 6 of this E-Book.

c. If required by the verification body, the airplane operator must provide access to relevant information on the cancellation of emissions units.

d. Following the verification of the Emissions Unit Cancellation Report by the verification body, the airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, a copy of the Emissions Unit Cancellation Report and associated Verification Report to GACA in accordance with the timeline in GACAR 157 Appendix A.

e. GACA will perform an order of magnitude check of the Emissions Unit Cancellation Report in accordance with the timeline, as defined in Appendix A.

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17.8.4. Content of emissions unit cancellation report from airplane operator to GACA

Table 8-1. Emissions Unit Cancellation Report from Airplane operator to GACA

Field #	Data Field	Details
Field 1	Airplane operator information	1.a Name of airplane operator 1.b Detailed contact information of airplane operator 1.c Name of a point of contact 1.d Unique identifier by which an airplane operator is attributed to a State 1.e State
Field 2	Compliance period years reported	2. Year(s) in the reported compliance period for which offsetting requirements are reconciled in this report
Field 3	Airplane operator's total final offsetting requirements	3. Airplane operator's total final offsetting requirements (in tons), as informed by GACA
	Total quantity of emissions units cancelled	4. Total quantity of emissions units cancelled to reconcile the total final offsetting requirements in Field 3
Field 5	Consolidated identifying information for cancelled emissions units	For each batch of cancelled emissions units (<i>batch</i> defined as a contiguous quantity of serialized emissions units), identify the following: 5.a Quantity of emissions units cancelled; 5.b Start of serial numbers; 5.c End of serial numbers; 5.d Date of cancellation; 5.e Eligible emissions unit program; 5.f Unit type; 5.g Host country; 5.h Methodology; 5.i Demonstration of unit date eligibility; 5.j Program-designated registry name; 5.k Unique identifier for registry account to which the batch was cancelled; 5.l Airplane operator in whose name the unit was cancelled; and 5.m The unique identifier for the registry account from which the cancellation was initiated.

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17.8.5. Content of emissions unit cancellation report from GACA to ICAO

Table 8-2. Content of Emissions Unit Cancellation Report from GACA to ICAO

<i>Field #</i>	<i>Data Field</i>	<i>Details</i>
Field 1	Airplane operators attributed to KSA	1.a. Airplane operators attributed to KSA with offsetting requirements in the reported compliance period
Field 2	Compliance period years reported	2. Year(s) in the reported compliance period for which offsetting requirements are reconciled in the report
Field 3	Total final offsetting requirements	3. Total aggregated airplane operators' final offsetting requirements (in tons), as informed by GACA
Field 4	Total quantity of emissions units cancelled	4. Total aggregated quantity of emissions units cancelled to reconcile the total final offsetting requirements in Field 3
Field 5	Consolidated identifying information for cancelled emissions units	For each batch of cancelled emissions units (<i>batch</i> defined as a contiguous quantity of serialized emissions units), identify the following: 5.a Quantity of emissions units cancelled; 5.b Start of serial numbers; 5.c End of serial numbers; 5.d Date of cancellation; 5.e Eligible emissions unit program; 5.f Unit type; 5.g Host country; 5.h Methodology; 5.i Demonstration of unit date eligibility; and 5.j Program-designated registry name.

Note. — The information in Field 5 will be required for ensuring critical CORSIA registry functions including ICAO monitoring, periodic review, and statistical analysis of CORSIA.

Note. — The information on the following fields can be found in the ICAO document entitled “CORSIA Central Registry (CCR): Information and Data for Transparency” that is available on the ICAO CORSIA website:

- a. Information at a State and global aggregate level for a specific compliance period;
- b. Total final offsetting requirements over the compliance period;
- c. Total quantity of emissions units cancelled over the compliance period to reconcile the total final offsetting requirements; and

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d. Consolidated identifying information for cancelled emissions units included in Field 5 of Table A8-2.

Note. — Appendix A of this E-Book 157-01 provides a list of activities and requirements for airplane operators and the associated date by which the activities must be completed.

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APPENDIX A: TIMELINES AND COMPLIANCE PERIODS

1. Airport operators’ (AO) timeline and compliance milestones for GACAR 157 are presented in Table A-1.

a. The initial milestones are associated with the 2019-2020 Baseline Period, when AOs must first report their fuel use and CO₂ emissions to GACA, and continue into the subsequent compliance periods. The 2-year Baseline Period emissions establishes each AO’s emissions baseline, which will contribute to ICAO’s Sector’s Growth Factor, the basis for computing CO₂ emissions offset requirements. Each subsequent compliance period is 3 years long.

Table A-1: GACAR 157 Timeline & Compliance Milestones			
Period	Year	Deadline	Tasks
2019-2020 Baseline Period	2019	1-Jan-19	Initiate monitoring 2019 CO ₂ emissions from international flights
		28-Feb-19	Submit a complete Emissions Monitoring Plan (EMP) to GACA
		31-Dec-19	Complete 2019 CO ₂ emissions monitoring
	2020	1-Jan-20	Initiate monitoring 2020 CO ₂ emissions from international flights
		1-Mar-20	Compile CO ₂ emissions data for a full calendar year (2019)
		31-May-20	Submit verified emissions report to GACA
		31-Dec-20	Complete 2020 CO ₂ emissions monitoring
2021-2023 Period		1-Mar	Compile CO ₂ emissions data for a full calendar year; repeat each year
		30-Apr	Submit verified emissions report to GACA; repeat each year
2024-2026 Period		31-Jan	Cancel emissions units from the prior period for compliance
		1-Mar	Compile CO ₂ emissions data for a full calendar year; repeat each year
		30-Apr	Submit verified emissions report to GACA; repeat each year
Compliance milestones for the next period (2027-2030) and subsequent periods through 2035 repeat the sequence of tasks from the 2024-2026 period			

1.2019-2020 period

a. During the period of 2019-2020, the airplane operators must comply with the requirements according to

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the following timeline, where applicable:

Table A-2. Details of compliance timeline for 2019- 2020 period

<i>Timeline</i>	<i>Activity</i>
1 January 2019 to 31 December 2019	The airplane operator must monitor, CO ₂ emissions for 2019 from international flights.
1 January 2020 to 31 December 2020	The airplane operator must monitor CO ₂ emissions for 2020 from international flights.
1 January 2020 to 31 May 2020	The airplane operator must compile 2019 CO ₂ emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
31 May 2020	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2019 to GACA.
30 June 2020	GACA will notify ICAO which option it has selected for calculating the airplane operator’s CO ₂ emissions during the 2021-2023 period

Note: The time for verification of the airplane operator’s Emissions Report is longer during the 2019-2020 period than subsequent periods.

2.2021-2023 period

a. During the period of 2021-2023, airplane operators must comply with the requirements according to the following timeline, where applicable:

Table A-3. Details of compliance timeline for 2021-2023 period

<i>Timeline</i>	<i>Activity</i>
1 January 2021 to 31 December 2021	The airplane operator must monitor CO ₂ emissions for 2021 from international flights.
1 January 2021 to 31 May 2021	The airplane operator must compile 2020 CO ₂ emissions data to be verified by a verification body.
Recommendation. — <i>The Airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	

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31 May 2021	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2020 to GACA.
1 January 2022 to 31 December 2022	The airplane operator must monitor CO ₂ emissions for 2022 from international flights.
<i>Timeline</i>	<i>Activity</i>
1 January 2022 to 30 April 2022	The airplane operator must compile 2021 CO ₂ emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator should submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2022	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2021 to GACA.
1 January 2023 to 31 December 2023	The airplane operator must monitor CO ₂ emissions for 2023 from international flights.
1 January 2023 to 30 April 2023	The airplane operator must compile 2022 CO ₂ emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2023	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2022 to GACA.
<i>Note that the time for verification of the airplane operator's Emissions Report is shorter during the 2021-2023 period than the 2019-2020 period.</i>	

3.2024-2026 period

a. During the period of 2024-2026, airplane operators must comply with the requirements according to the following timeline, where applicable:

Table A-4. Details of compliance timeline for 2024-2026 period

<i>Timeline</i>	<i>Activity</i>
1 January 2024 to 31 December 2024	The airplane operator must monitor CO ₂ emissions for 2024 from international flights.

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1 January 2024 to 30 April 2024	The Airplane operator must compile 2023 emissions data to be verified by a verification body.
Recommendation — <i>The Airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2024	The Airplane operator and the verification body must both independently submit, upon authorization by the Airplane operator, the verified Emissions Report and associated Verification Report for 2023 to GACA.
1 January 2025 to 31 December 2025	The airplane operator must monitor CO ₂ emissions for 2025 from international flights.
31 January 2025 or 60 days after GACA informs airplane operators of their total final offsetting requirements for the 2021-2023 period, whichever date comes later	The airplane operator must cancel emissions units for compliance during the 2021 to 2023 period.
<i>Timeline</i>	<i>Activity</i>
7 February 2025	The airplane operator must request that their cancellation of Eligible Emissions Units for the 2021-2023 period is communicated on the respective Eligible Emissions Units Program registry (or registries) public website(s).
1 December 2024 to 30 April 2025	The airplane operator must compile their Emissions Unit Cancellation Report covering the 2021-2023 period to be verified by a verification body.
1 January 2025 to 30 April 2025	The airplane operator must compile 2024 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2025	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2024 to GACA. The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Unit Cancellation Report and associated Verification Report for the 2021-2023 period to GACA.
1 January 2026 to 31 December 2026	The airplane operator must monitor, CO ₂ emissions for 2026 from international flights.

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1 January 2026 to 30 April 2026	The airplane operator must compile 2025 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2026	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2025 to GACA.

4. 2027-2029 period

a. During the period of 2027-2029, airplane operators must comply with the requirements according to the following timeline, where applicable:

Table A-5. Details of compliance timeline for 2027-2029 period

<i>Timeline</i>	<i>Activity</i>
1 January 2027 to 31 December 2027	The airplane operator must monitor, CO ₂ emissions for 2027 from international flights.
1 January 2027 to 30 April 2027	The airplane operator must compile 2026 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2027	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2026 to GACA
1 January 2028 to 31 December 2028	The airplane operator must monitor CO ₂ emissions for 2028 from international flights.
<i>Timeline</i>	<i>Activity</i>
31 January 2028 or 60 days after the GACA informs airplane operators of their total final offsetting requirements for the 2024-2026 period, whichever date comes later	The airplane operator must cancel emissions units for compliance during the 2024 to 2026 period.

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7 February 2028	The airplane operator must request that their cancellation of Eligible Emissions Units for the 2024-2026 period is communicated on the respective Eligible Emissions Units Program registry (or registries) public website(s).
1 December 2027 to 30 April 2028	The airplane operator must compile their Emissions Unit Cancellation Report covering the 2024-2026 period to be verified by a verification body.
1 January 2028 to 30 April 2028	The airplane operator must compile 2027 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2028	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2027 to GACA. The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Unit Cancellation Report and associated Verification Report for the 2024-2026 compliance period GACA.
1 January 2029 to 31 December 2029	The airplane operator must monitor, CO ₂ emissions for 2029 from international flights.
1 January 2029 to 30 April 2029	The airplane operator must compile 2028 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator must submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2029	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2028 to GACA.
30 November 2029	Airplane operators' offsetting requirements for 2028 will be calculated and provided to them.

3.2030-2032 period

a. During the period of 2030-2032, airplane operators must comply with the requirements according to the following timeline, where applicable:

Table A-6. Details of compliance timeline for 2030-2032 period

<i>Timeline</i>	<i>Activity</i>
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1 January 2030 to 31 December 2030	The airplane operator must monitor, CO ₂ emissions for 2030 from international flights.
1 January 2030 to 30 April 2030	The airplane operator must compile 2029 CO ₂ emissions data to be verified by a verification body.
Recommendation. — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2030	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2029 to GACA.
1 January 2031 to 31 December 2031	The airplane operator must monitor CO ₂ emissions for 2031 from international flights.
31 January 2031 or 60 days after the GACA informs airplane operators of their total final offsetting requirements for the 2027-2029 period, whichever date comes later	The airplane operator must cancel emissions units for compliance during the 2027 to 2029 period.
7 February 2031	The airplane operator must request that their cancellation of Eligible Emissions Units for the 2027-2029 period is communicated on the respective Eligible Emissions Units Program registry (or registries) public website(s).
1 December 2030 to 30 April 2031	The airplane operator must compile their Emissions Unit Cancellation Report covering the 2027-2029 period to be verified by a verification body.
1 January 2031 to 30 April 2031	The airplane operator must compile 2030 emissions data to be verified by a verification body.
Recommendation. — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2031	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2030 to GACA. The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Unit Cancellation Report and associated Verification Report for the 2027-2029 period to GACA

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1 January 2032 to 31 December 2032	The airplane operator must monitor, CO ₂ emissions for 2032 from international flights
1 January 2032 to 30 April 2032	The airplane operator must compile 2031 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2032	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2031 to GACA

4.2033-2035 period

a. During the period of 2033-2035, airplane operators must comply with the requirements according to the following timeline, where applicable:

Table A-7. Details of compliance timeline for 2033-2035 period

<i>Timeline</i>	<i>Activity</i>
1 January 2033 to 31 December 2033	The airplane operator must monitor, CO ₂ emissions for 2033 from international flights,
1 January 2033 to 30 April 2033	The airplane operator must compile 2032 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2033	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2032 to GACA.
1 January 2034 to 31 December 2034	The airplane operator must monitor, CO ₂ emissions for 2034 from international flights,

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31 January 2034 or 60 days after GACA informs Airplane operators of their total final offsetting requirements for the 2030-2032 period, whichever date comes later	The airplane operator must cancel emissions units for compliance during the 2030 to 2032 period.
7 February 2034	The airplane operator must request that their cancellation of Eligible Emissions Units for the 2030-2032 period is communicated on the respective Eligible Emissions Units Program registry (or registries) public website(s).
1 December 2033 to 30 April 2034	The airplane operator must compile their Emissions Unit Cancellation Report covering the 2030-2032 period to be verified by a verification body.
1 January 2034 to 30 April 2034	The airplane operator must compile 2033 emissions data to be verified by a verification body.
Recommendation. — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2034	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2033 to GACA. The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Unit Cancellation Report and associated Verification Report for the 2030-2032 compliance period to GACA.
1 January 2035 to 31 December 2035	The airplane operator must monitor, CO ₂ emissions for 2035 for international flights,
1 January 2035 to 30 April 2035	The airplane operator must compile 2034 emissions data to be verified by a verification body.
Recommendation. — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2035	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Report and associated Verification Report for 2034 to GACA.

b. To complete the period of 2033-2035, airplane operators must comply with the requirements according

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to the following timeline, where applicable:

Table A-8. Details of compliance timeline for 2033-2035 period

<i>Timeline</i>	<i>Activity</i>
1 January 2036 to 30 April 2036	The airplane operator must compile 2035 emissions data to be verified by a verification body.
Recommendation — <i>The airplane operator may submit its Emissions Report for verification as soon as possible after completing its Emissions Report.</i>	
30 April 2036	The airplane operator and the verification body must both independently submit, upon authorization by the Airplane operator, the verified Emissions Report and associated Verification Report for 2035 to GACA.
31 January 2037 or 60 days after GACA informs airplane operators of their total final offsetting requirements for the 2033-2035 period, whichever date comes later	The airplane operator must cancel emissions units for compliance during the 2033-2035 period.
7 February 2037	The airplane operator must request that their cancellation of Eligible Emissions Units for the 2033-2035 period is communicated on the respective Eligible Emissions Units Program registry (or registries) public website(s)
1 December 2036 to 30 April 2037	The airplane operator must compile their Emissions Unit Cancellation Report covering the 2033-2035 period to be verified by a verification body.
30 April 2037	The airplane operator and the verification body must both independently submit, upon authorization by the airplane operator, the verified Emissions Unit Cancellation Report and associated Verification Report for the 2033-2035 compliance period to GACA

Note: If the Sector’s Growth Factor (SGF) for the year to offset is not available by 31 October of that year and total final offsetting requirements for the that period are delayed, ICAO will publish updated deadlines related to the cancellation of emissions units for compliance during the period.

2.GACA timeline and compliance milestones are presented in Table A-9.

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Table A-9. Compliance Periods and Timelines

<i>Timeline</i>	<i>Activity</i>
28 February 2019	GACA will approve Emissions Monitoring Plans (only once, unless there is a need to review).
30 April 2019	GACA will submit a list of airplane operators that are attributed to it to ICAO, as well as a list of verification bodies accredited in the state.
31 May 2019	Recommendation —GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of airplane operators and the State to which they have been attributed. The document is available on the ICAO CORISIA website.
1 June 2020 to 31 August 2020	GACA will conduct an order of magnitude check of the verified Emissions Report for 2019, including any filling in of data gaps in case of non-reporting by airplane operators.
1 August 2020	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2021 compliance year.
31 August 2020	GACA will submit required information regarding CO ₂ emissions for 2019 to ICAO.
30 November 2020	GACA will submit updates to the list of Airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State.
31 December 2020	Recommendation —GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of airplane operators and the State to which they have been attributed.
June 2021 to 31 August 2021	GACA will conduct an order of magnitude check of the verified Emissions Report for 2020, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2021	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation from 1 January 2022.
1 August 2021	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2022 compliance year.
31 August 2021	GACA will submit required information regarding CO ₂ emissions for 2020 to ICAO.
30 September 2021	GACA will calculate and inform airplane operators attributed to it of their average total CO ₂ emissions during 2019 and 2020.
30 November 2021	GACA will submit updates to the list of Airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the state.

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31 December 2021	Recommendation — <i>GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of airplane operators and the State to which they have been attributed. The document is available on the ICAO CORISIA website.</i>
1 May 2022 to 31 July 2022	GACA will conduct an order of magnitude check of the verified Emissions Report for 2020, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2022	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation from 1 January 2022.
31 July 2022	GACA will submit required information regarding CO ₂ emissions for 2021 to ICAO.
1 August 2022	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2022 compliance year.
31 October 2022	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2021 from the ICAO document entitled “CORISIA Annual Sector’s Growth Factor (SGF)” that can be found on the ICAO CORISIA website.
30 November 2022	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited to GACA. GACA will calculate and inform Airplane operators of offsetting requirements for 2021, and based on a chosen formula.
31 December 2022	Recommendation — GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed. The document is available on the ICAO CORISIA website.
1 May 2023 to 31 July 2023	GACA will conduct an order of magnitude check of the verified Emissions Report for 2020, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2023	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation from 1 January 2024.
31 July 2023	GACA will submit required information regarding CO ₂ emissions for 2021 to ICAO.
1 August 2023	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2024 compliance year.

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31 October 2023	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2022 from the ICAO document entitled “CORISIA Annual Sector’s Growth Factor (SGF)” that can be found on the ICAO CORISIA website.
30 November 2023	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the state. GACA will calculate and inform airplane operators of offsetting requirements for 2022, and based on a chosen formula in.
December 2023	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited to GACA. GACA will calculate and inform airplane operators of offsetting requirements for 2022.
30 April 2024	Recommendation — GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions" summarizing a list of Airplane operators and the State to which they have been attributed.
1 May 2024 to 31 July 2024	GACA will conduct an order of magnitude check of the verified Emissions Report for 2023, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2024	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation from 1 January 2025.
31 July 2024	GACA will submit required information regarding CO ₂ emissions for 2023 to ICAO.
1 August 2024	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2025 compliance year.
31 October 2024	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2023 from the ICAO document entitled “CORISIA Annual Sector’s Growth Factor (SGF)”.
30 November 2024	GACA will calculate and inform Airplane operators of their total final offsetting requirements for the 2021 to 2023 period.
December 2024	GACA will submit updates to the list of Airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State.

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31 December 2024	<p>Recommendation —GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed in accordance with Part II, Chapter 1, 1.2.3. The document is available on the ICAO CORISIA website.</p>
1 May 2025 to 31 July 2025	<p>GACA will conduct an order of magnitude check of the verified Emissions Report for 2024, including any filling in of data gaps in case of non-reporting by Airplane operators.</p> <p>GACA will undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2021-2023 period</p>
30 June 2025	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in the applicability of Part II, Chapter 3 from 1 January 2026.
31 July 2025	GACA will submit required information regarding CO2 emissions for 2024 to ICAO.
31 July 2025	GACA will report to ICAO the required information regarding emissions unit cancellation for the 2021-2023 period.
1 August 2025	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2026 compliance year.
31 October 2025	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2024 from the ICAO document entitled “CORISIA Annual Sector’s Growth Factor (SGF)”.
30 November 2025	GACA will calculate and inform Airplane operators of their offsetting requirements for 2024,
December 2025	GACA will submit updates to the list of Airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State.
31 December 2025	<p>Recommendation —GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of airplane operators and the State to which they have been attributed. The document is available on the ICAO CORISIA website.</p>
1 May 2026 to 31 July 2026	GACA will conduct an order of magnitude check of the verified Emissions Report for 2025, including filling in any data gaps in case of non-reporting by airplane operators
30 June 2026	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation from 1 January 2027.

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31 July 2026	GACA will submit required information regarding CO ₂ emissions for 2025 to ICAO.
1 August 2026	GACA will obtain and use the ICAO document entitled “CORSA States for Chapter 3 State Pairs” applicable for the 2027 compliance year
31 October 2026	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2025 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
30 November 2026	GACA will calculate and inform airplane operators of their offsetting requirements for 2025.
30 November 2026	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State
31 December 2026	Recommendation —GACA may obtain and use the ICAO document entitled “CORSA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed. The document is available on the ICAO CORSA website.
1 May 2027 to 31 July 2027	GACA will conduct an order of magnitude check of the verified Emissions Report for 2026, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2027	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in emissions offsetting from 1 January 2028.
31 July 2027	GACA will submit required information regarding CO ₂ emissions for 2026 to.
1 August 2027	GACA will obtain and use the ICAO document entitled “CORSA States for Chapter 3 State Pairs” applicable for the 2028 compliance year.
31 October 2027	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2026 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
30 November 2027	GACA will calculate and inform airplane operators of their offsetting requirements for 2026. GACA will calculate and inform airplane operators of their total final offsetting requirements for the 2024 to 2026 period.
December 2027	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State in accordance.

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31 December 2027	Recommendation —GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed. The document is available on the ICAO CORISIA website.
1 May 2028 to 31 July 2028	GACA will conduct an order of magnitude check of the verified Emissions Report for 2027, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2028	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in emissions offsetting from 1 January 2028.
31 July 2028	GACA will undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2024-2026 period.
31 July 2028	GACA will submit required information regarding CO ₂ emissions for 2027 to ICAO.
31 July 2028	GACA will report to ICAO the required information regarding emissions unit cancellation for the 2024-2026 period
1 August 2028	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2029 compliance year.
31 October 2028	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2027 from the ICAO document entitled “CORISIA Annual Sector’s Growth Factor (SGF)”.
<i>Timeline</i>	<i>Activity</i>
30 November 2028	GACA will calculate and inform airplane operators of their offsetting requirements for 2027.
December 2028	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State.
31 December 2028	Recommendation —GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed. The document is available on the ICAO CORISIA website.
1 May 2029 to 31 July 2029	GACA will conduct an order of magnitude check of the verified Emissions Report for 2028, including filling in any data gaps in case of non-reporting by airplane operators in.
30 June 2029	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in GACAR 157.01 Subpart D from 1 January 2030.
31 July 2029	GACA will submit required information regarding CO ₂ emissions for 2028 to ICAO.

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1 August 2029	GACA will obtain and use the ICAO document entitled “CORSA States for Chapter 3 State Pairs” applicable for the 2030 compliance year.
	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State.
31 October 2029	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2028 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
31 December 2029	Recommendation —GACA may obtain and use the ICAO document entitled “CORSA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed. The document is available on the ICAO CORSA website.
1 May 2030 to 31 July 2030	GACA will conduct an order of magnitude check of the verified Emissions Report for 2029, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2030	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in GACAR 157.01 Subpart D from 1 January 2031.
31 July 2030	GACA will submit required information regarding CO ₂ emissions for 2029 to ICAO.
1 August 2030	GACA will obtain and use the ICAO document entitled “CORSA States for Chapter 3 State Pairs” applicable for the 2031 compliance year.
31 October 2030	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2029 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
<i>Timeline</i>	<i>Activity</i>
30 November 2030	GACA will calculate and inform airplane operators of their offsetting requirements for 2029.
30 November 2030	GACA will calculate and inform airplane operators of their total final offsetting requirements for the 2027 to 2029 period.
December 2030	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State.
31 December 2030	Recommendation. —GACA may obtain and use the ICAO document entitled “CORSA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed. The document is available on the ICAO CORSA website.

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1 May 2031 to 31 July 2031	GACA will conduct an order of magnitude check of the verified Emissions Report for 2030, including filling in any data gaps in case of non-reporting by Airplane operators.
30 June 2031	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in emissions offsetting according to GACAR 157.01 Subpart D from 1 January 2032.
31 July 2031	GACA will undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2027-2029 period
31 July 2031	GACA will submit required information regarding CO ₂ emissions for 2030 to ICAO.
31 July 2031	GACA will report to ICAO the required information regarding emissions unit cancellation for the 2027-2029 period
1 August 2031	GACA will obtain and use the ICAO document entitled “CORSA States for Chapter 3 State Pairs” applicable for the 2032 compliance year.
31 October 2031	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2030 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
30 November 2031	GACA will calculate and inform airplane operators of their offsetting requirements for 2030.
December 2031	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State
31 December 2031	Recommendation —GACA may obtain and use the ICAO document entitled “CORSA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed
1 May 2032 to 31 July 2032	GACA will conduct an order of magnitude check of the verified Emissions Report for 2031, including filling in any data gaps in case of non-reporting by airplane operator.
30 June 2032	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in emissions offsetting according to GACAR 157.01 Subpart D from 1 January 2033.
<i>Timeline</i>	<i>Activity</i>
31 July 2032	GACA will submit required information regarding CO ₂ emissions for 2031 to ICAO.
1 August 2032	GACA will obtain and use the ICAO document entitled “CORSA States for Chapter 3 State Pairs” applicable for the 2033 compliance year.

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31 October 2032	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2031 from the ICAO document entitled “CORISIA Annual Sector’s Growth Factor (SGF)”.
30 November 2032	GACA will calculate and inform airplane operators of their offsetting requirements for 2031,
December 2032	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State
31 December 2032	Recommendation. — <i>GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed</i>
1 May 2033 to 31 July 2033	GACA will conduct an order of magnitude check of the verified Emissions Report for 2032, including filling in any data gaps in case of non-reporting by airplane operators.
30 June 2033	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in the applicability of Part II, Chapter 3 from 1 January 2034.
31 July 2033	GACA will submit required information regarding CO ₂ emissions for 2032 to ICAO.
1 August 2033	GACA will obtain and use the ICAO document entitled “CORISIA States for Chapter 3 State Pairs” applicable for the 2034 compliance year.
31 October 2033	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2032 from the ICAO document entitled “CORISIA Annual Sector’s Growth Factor (SGF)”.
30 November 2033	GACA will calculate and inform airplane operators of their offsetting requirements for 2032,
30 November 2033	GACA will calculate and inform airplane operators of their total final offsetting requirements for the 2030 to 2032 period,.
December 2033	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited.
31 December 2033	Recommendation — <i>GACA may obtain and use the ICAO document entitled “CORISIA Airplane Operator to State Attributions” summarizing a list of Airplane operators and the State to which they have been attributed</i>
1 May 2034 to 31 July 2034	GACA will conduct an order of magnitude check of the verified Emissions Report for 2033, including filling in any data gaps in case of non-reporting by airplane operators.

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30 June 2034	GACA will notify ICAO of any change in its decision to voluntarily participate, or to discontinue the voluntary participation in emissions offsetting according to GACAR 157.01 subpart D from 1 January 2035.
31 July 2034	GACA will undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2030-2032 period
31 July 2034	GACA will submit required information regarding CO ₂ emissions for 2033 to ICAO.
31 July 2034	GACA will report to ICAO the required information regarding emissions unit cancellation for the 2030-2032 period
1 August 2034	GACA will obtain and use the ICAO document entitled “CORSA States for Chapter 3 State Pairs” applicable for the 2035 compliance year.
31 October 2034	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2033 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
30 November 2034	GACA will calculate and inform airplane operators of their offsetting requirements for 2033.
December 2034	GACA will submit updates to the list of airplane operators that are attributed to it to ICAO, as well as updates to the list of verification bodies accredited in the State.
1 December 2034	Recommendation. —GACA may obtain and use the ICAO document entitled “CORSA Airplane Operator to State Attributions” summarizing a list of airplane operators and the State to which they have been attributed.
1 May 2035 to 31 July 2035	GACA will conduct an order of magnitude check of the verified Emissions Report for 2034, including filling in any data gaps in case of non-reporting by airplane operators.
31 July 2035	GACA will submit required information regarding CO ₂ emissions for 2034 to ICAO.
31 October 2035	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2034 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
30 November 2035	GACA will calculate and inform airplane operators of their offsetting requirements for 2034.
1 May 2036 to 31 July 2036	GACA will conduct an order of magnitude check of the verified Emissions Report for 2035, including filling in any data gaps in case of non-reporting by Airplane operators.
31 July 2036	GACA will submit required information regarding CO ₂ emissions for 2035 to ICAO.
<i>Timeline</i>	<i>Activity</i>

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31 October 2036	GACA will obtain and use the Sector’s Growth Factor (SGF) for 2035 from the ICAO document entitled “CORSA Annual Sector’s Growth Factor (SGF)”.
30 November 2036	GACA will calculate and inform airplane operators of their offsetting requirements for 2035.
30 November 2036	GACA will calculate and inform Airplane operators of their total final offsetting requirements for the 2033 to 2035 period
1 May 2037 to 31 July 2037	GACA will undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2033-2035 period.
31 July 2037	GACA will report to ICAO the required information regarding emissions unit cancellation for the 2033-2035 period.

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APPENDIX B: FUEL USE MONITORING METHODS

a. This appendix is concerned with fuel use monitoring by airplane operators. The methods proposed are representative of the most accurate established practices. Any equivalent procedures to those contained in this appendix must only be allowed after prior application to and approval by GACA.

b. The airplane operator, with the exception of an airplane operator eligible to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), must choose from the following fuel use monitoring methods:

- (1) Method A;
- (2) Method B;
- (3) Block-off/Block-on;
- (4) Fuel Uplift; or
- (5) Fuel Allocation with Block Hour
- (6) Fuel Measurement points

c. All the five monitoring methods named above use the fuel measurement points specified below in Figure B-1.

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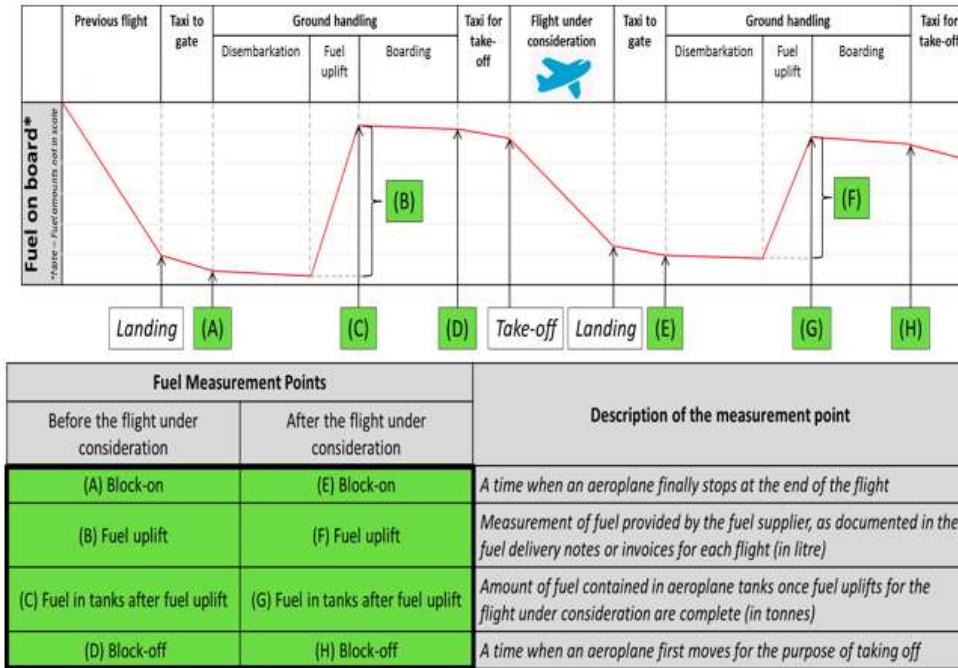


Figure B-1: Fuel measurement points for fuel-use methods.

I. Method 1: Method A

a. The first method is method A, which is calculated using the equation in Figure B-2, using the fuel measurements of fuel uplift and fuel in the tanks of the airplane after the fuel uplift before and after the flights in consideration.

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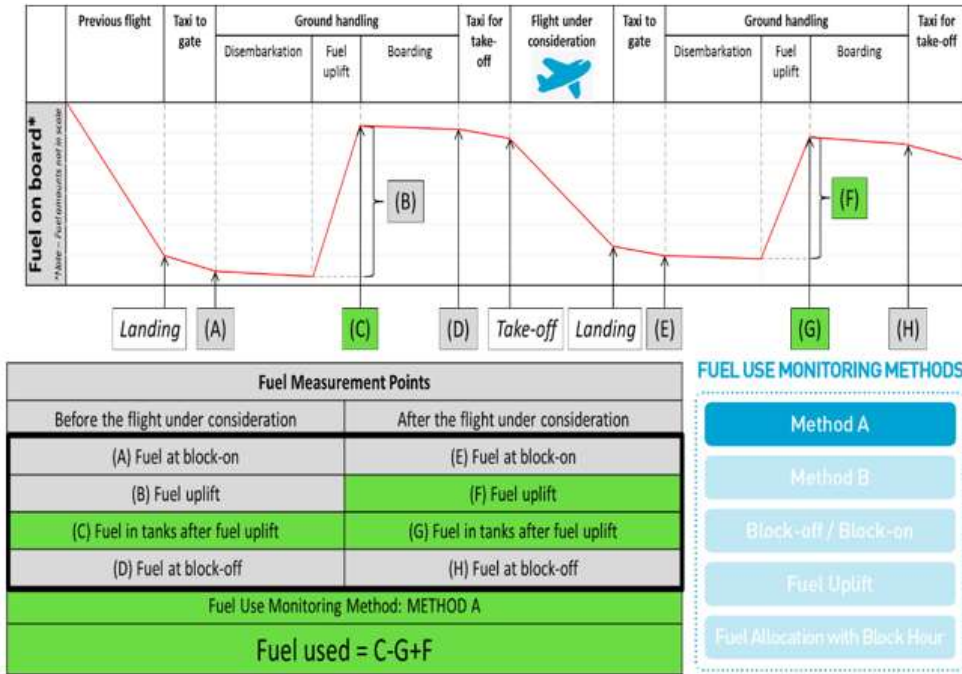


Figure B-2: Fuel measurement points for Method A.

i. Method A

a. Calculation

(1) Method A requires data from the flight under consideration (N) as well as data from the subsequent flight (N+1).

(2) The airplane operator must use the following formula to compute fuel use according to Method A:

where:

F_N = Fuel used for the flight under consideration (= flight N) determined using Method A (in tons);

T_N = Amount of fuel contained in Airplane tanks once fuel uplifts for the flight under consideration (i.e., flight N) are complete (in tons);

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T_{N+1} = Amount of fuel contained in Airplane tanks once fuel uplifts for the subsequent flight (i.e., flight N+1) are complete (in tons); and

U_{N+1} = Sum of fuel uplifts for the subsequent flight (i.e., flight N+1) measured in volume and multiplied with a density value (in tons).

- . **Note 1.** —Fuel uplift U_{N+1} is determined by the measurement by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight; see Figure 3-8 for process diagram for collecting the required data to implement Method A.
- . **Note 2.** —For ensuring completeness of the data, it is important to note that not only data generated during the flight under consideration (i.e., flight N) is needed, but also data generated from the subsequent flight (i.e., flight N+1). This is of particular importance when a domestic flight is followed by an international flight or vice versa. In order to avoid data gaps, it is therefore recommended that the Block-on fuel or the amount of fuel in the tank after all fuel uplifts for a flight is always recorded on flights of airplanes which are used for international flights. For the same reasons, fuel uplift data for all flights of those airplanes should be collected, before deciding which flights are international.

(3) The airplane operator performing on an ad-hoc basis flights attributed to another airplane operator must provide to the latter the fuel measurement values according to the Block-off / Block-on method.

(4) Where no fuel uplift for the flight or subsequent flight takes place, the amount of fuel contained in airplane tanks (T_N or T_{N+1}) must be determined at block-off for the flight or subsequent flight. In exceptional cases the variable T_{N+1} cannot be determined. This is the case when an airplane performs activities other than a flight, including undergoing major maintenance involving the emptying of the tanks, after the flight to be monitored. In such case the airplane operator may substitute the quantity " $T_{N+1} + U_{N+1}$ " with the amount of fuel remaining in tanks at the start of the subsequent activity of the airplane or fuel in tanks at Block-on, as recorded by technical logs.

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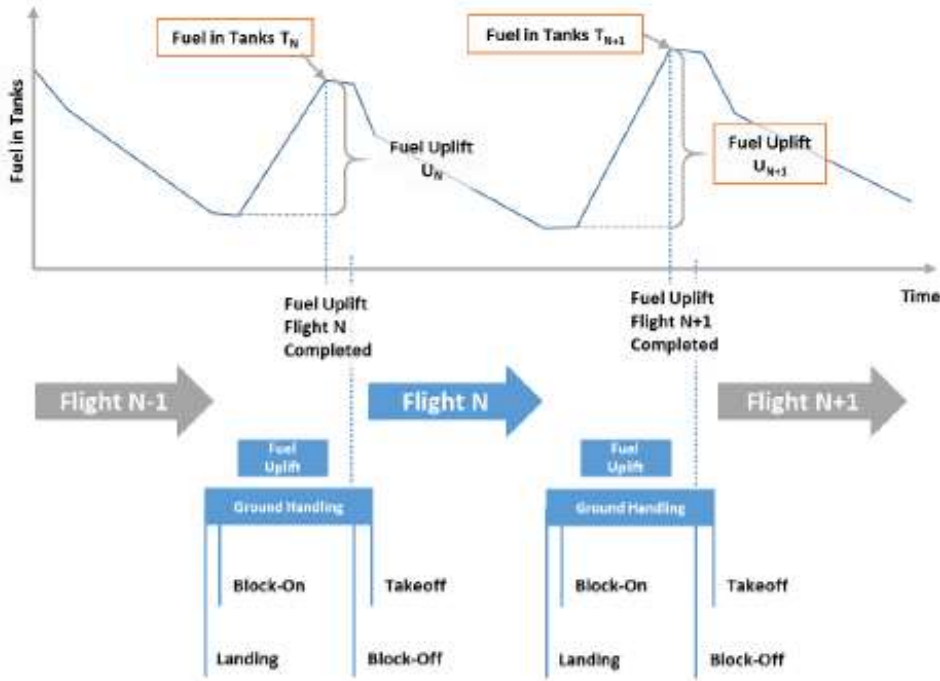


Figure B-3: Fuel Use Monitoring Method A

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a. Illustration of calculation:

(1) The following table shows an illustration of calculations of fuel use based on Method A.

Table B-1: Illustration of calculations of fuel use based on Method A

<i>Flight details</i>		<i>Fuel in Tanks and Uplift</i>				<i>Fuel use</i>
		<i>(in tons)</i>				
<i>Consecutive number</i>	<i>Date of flight</i>	<i>Uplift quantity</i>	<i>Fuel in tanks before uplift</i>	<i>Fuel in tanks after uplift</i>	<i>Block-off fuel</i>	<i>Method A</i>
N		UN		TN		$FN=TN-TN+1+UN+1$
1	28-Jan-16	89.3	5.3	94.6	94.5	87.6
2	29-Jan-16	43.3	7.0	50.3	50.3	44.5
3	29-Jan-16	26.9	5.8	32.7	32.7	23.1
4	30-Jan-16	-	9.6	9.6	9.5	6.1
5	30-Jan-16	71.7	3.4	75.1	75.0	70.6
...	31-Jan-16	-	4.5	4.5	4.5	-

Note. —The time of measurement of fuel in tanks is essential for the correct application of Method A. The value “fuel in tanks after uplift” is a rather unusual data point in airplane operations which should not be mistaken with the far more common “block-off fuel”.

b. Exemption:

(1) If no fuel uplift takes place for the flight under consideration, the amount of fuel contained in airplane tanks will be determined at block-off for the flight. The rule will be applied in the same way in cases where no fuel uplift takes place for the subsequent flight. This is shown for flight number 4 in the illustration of calculation table above (i.e., T_N taken as 9.5 tons block-off fuel for the flight under consideration, assuming 0.1 ton APU fuel burn between block-on and block-off).

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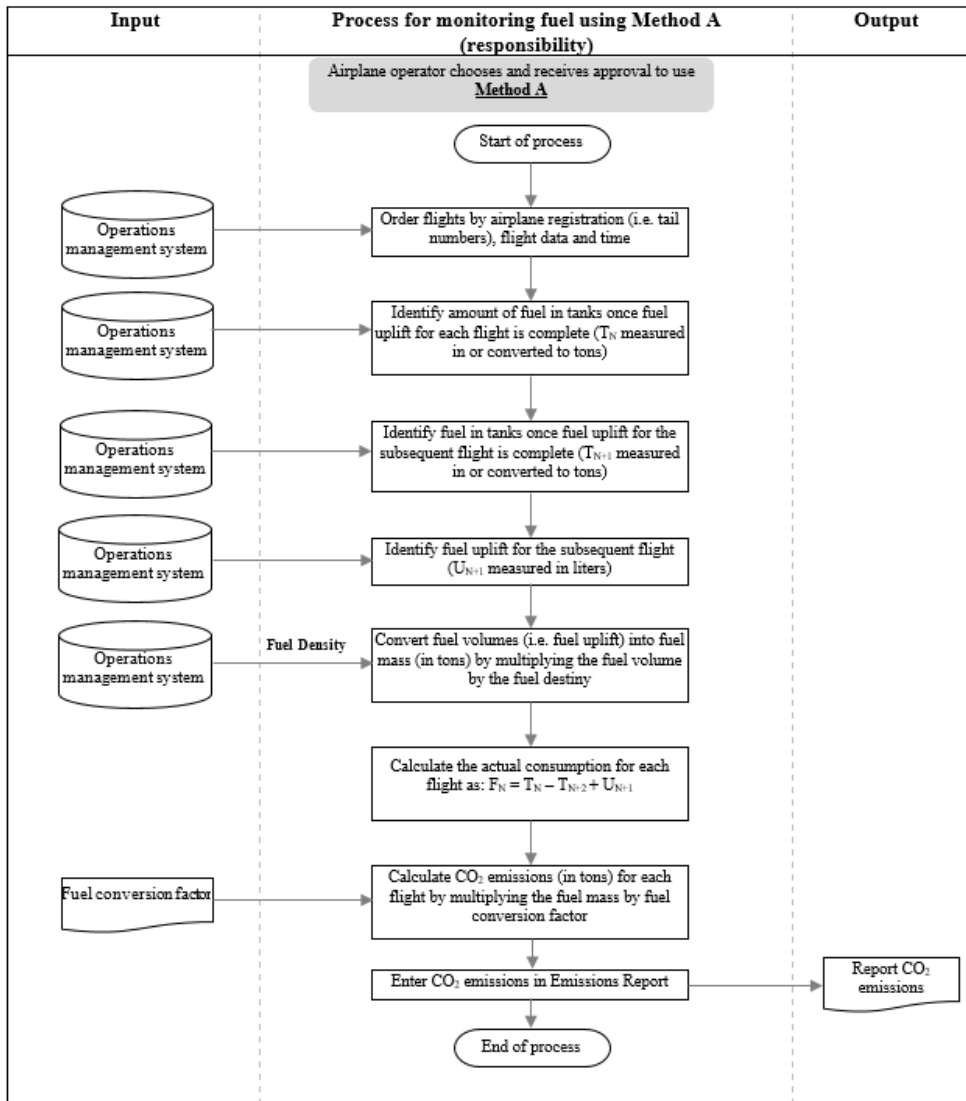


Figure B-4: Monitoring fuel use by flight using Method A

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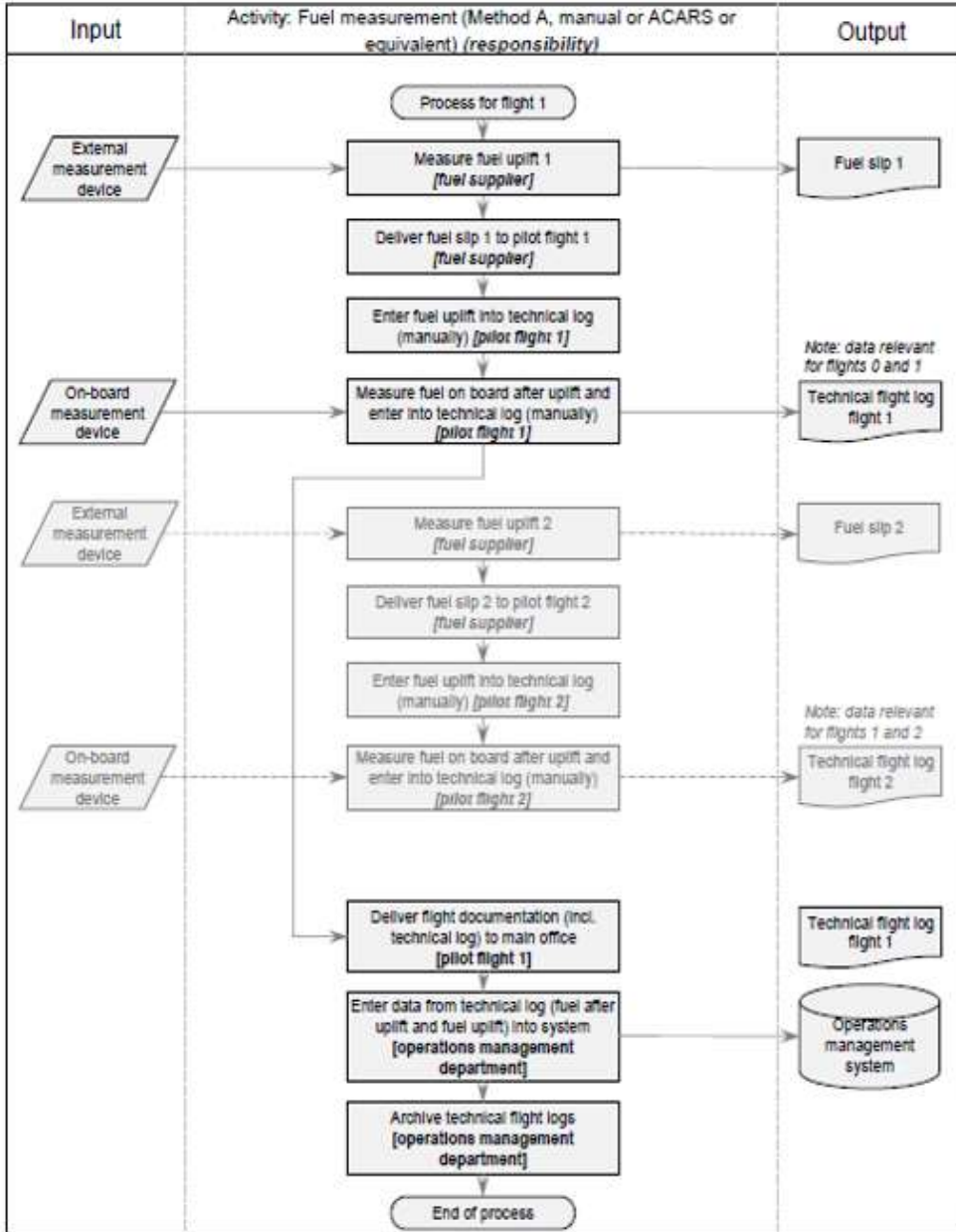


Figure B-5: Collection of required data to implement Method A with fuel uplift from fuel supplier

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Method 2: Method B

a. The second method is method B, which is calculated using the equation in Figure B-3, using the fuel measurements of fuel uplift and fuel at block-on before and after the flight under consideration.

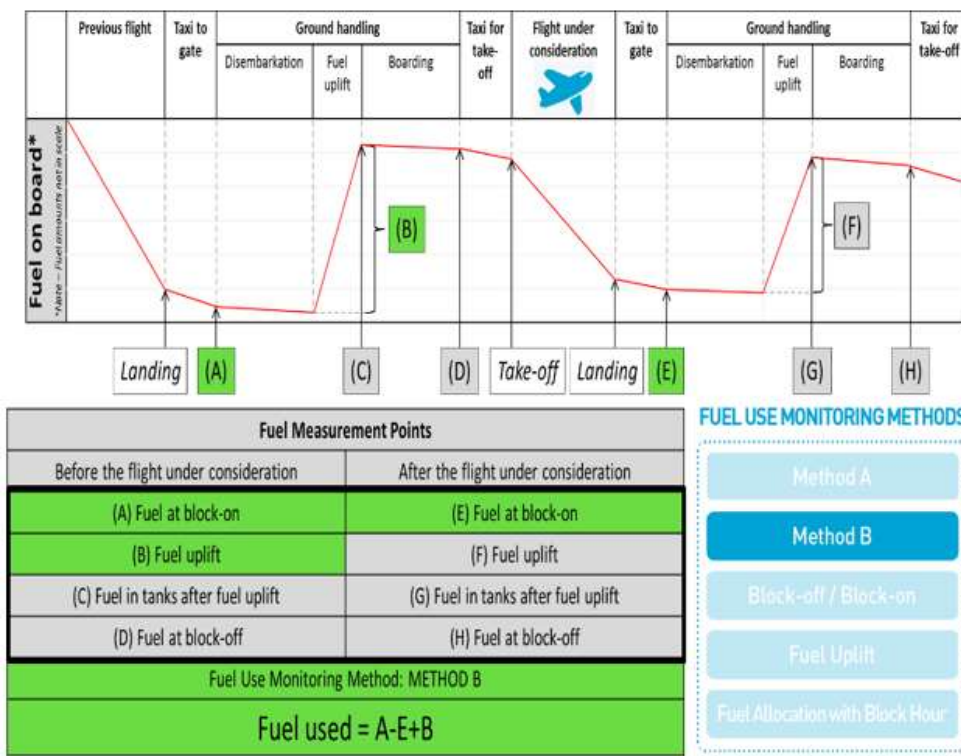


Figure B-6: Fuel measurement points for Method B.

ii. Method B

a. Calculation

(1) The airplane operator must use the following formula to compute fuel use according to Method B:

$$F_N = R_{(N-1)} - R_N + U_N$$

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where:

FN = Fuel used for the flight under consideration (i.e., flight N) determined using Method B (in tons);

RN-1 = Amount of fuel remaining in airplane tanks at the end of the previous flight (i.e., flight N-1) at Block-on before the flight under consideration, (in tons);

RN = Amount of fuel remaining in airplane tanks at the end of the flight under consideration (i.e., flight N) at Block-on after the flight, (in tons); and

UN = Fuel uplift for the flight considered measured in volume and multiplied with a density value (in tons).

Note 2. — Fuel uplift is determined by the measurement by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight;

Note 3. — For ensuring completeness of the data, it is important to note that not only data generated during the flight under consideration (i.e., flight N) is needed, but also data generated from the previous flight (i.e., flight N-1). This is in particular important when a domestic flight is followed by an international, or vice versa. For avoiding data gaps, it is therefore recommended that, the amount of fuel remaining in the tank after the flight or the amount of fuel in the tank after fuel uplift is always recorded on flights of Airplane which are used for international flights. For the same reasons, fuel uplift data for all flights of those airplanes should be collected, before deciding which flights are international.

(2) The airplane operator performing on an ad-hoc basis flights attributed to another airplane operator must provide to the latter the fuel measurement values according to the Block-off / Block-on method.

(3) Where an airplane does not perform a flight previous to the flight for which fuel consumption is being monitored (e.g., if the flight follows a major revision or maintenance), the airplane operator may substitute the quantity RN-1 with the amount of fuel remaining in airplane tanks at the end of the previous activity of the airplane, as recorded by technical logs.

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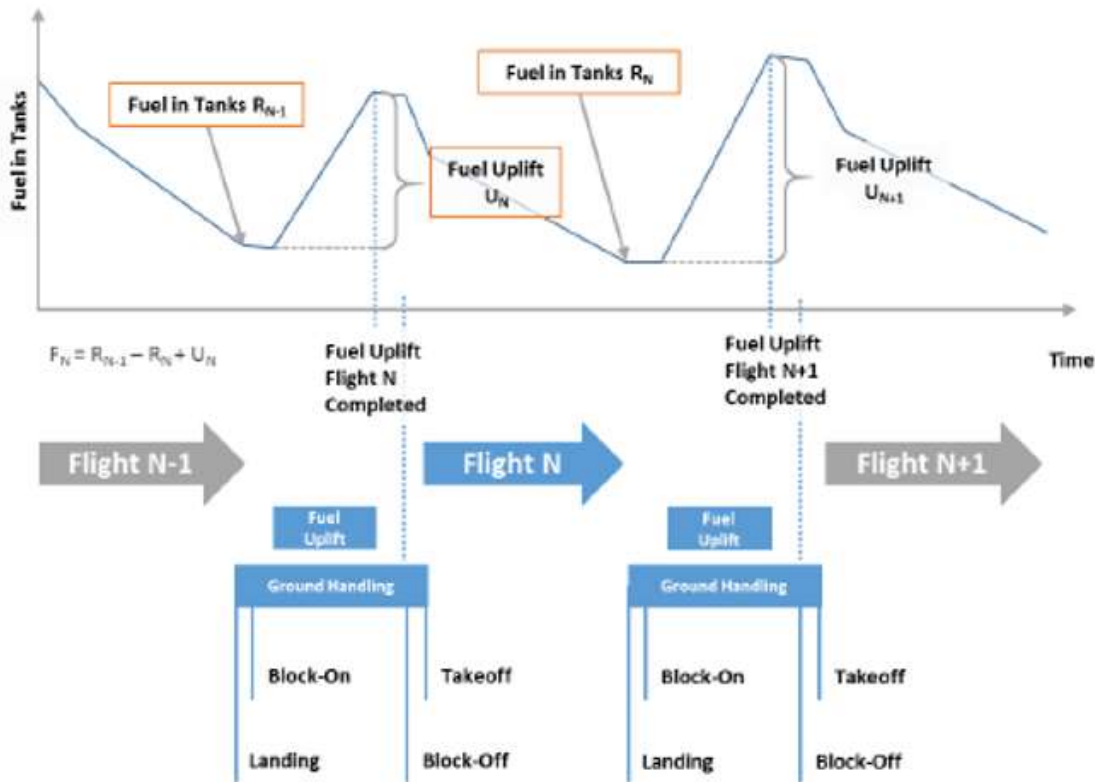


Figure B-7. Fuel Use Monitoring Method B

b. Illustrative calculation:

(1) The following table shows an illustration of calculations for Method B.

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Table B-2. Illustration of calculations of fuel use based on Method B

<i>Flight details</i>		<i>Fuel in Tanks and Uplift (in tons)</i>			<i>Fuel use</i>
<i>Consecutive number</i>	<i>Date of flight</i>	<i>On-block previous flight</i>	<i>On-block current flight</i>	<i>Uplift quantity</i>	<i>Method B</i>
N		R_{N-1}	R_N	U_N	$F_N = R_{N-1} - R_N + U_N$
1	28-Jan-16	5.5	8.5	89.3	86.3
2	29-Jan-16	8.5	5.8	43.3	46.0
3	29-Jan-16	5.8	9.7	26.9	23.0
4	30-Jan-16	9.7	4.0	-	5.7
5	30-Jan-16	4.0	4.5	71.7	71.2
...	31-Jan-16	4.5	-	-	-

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

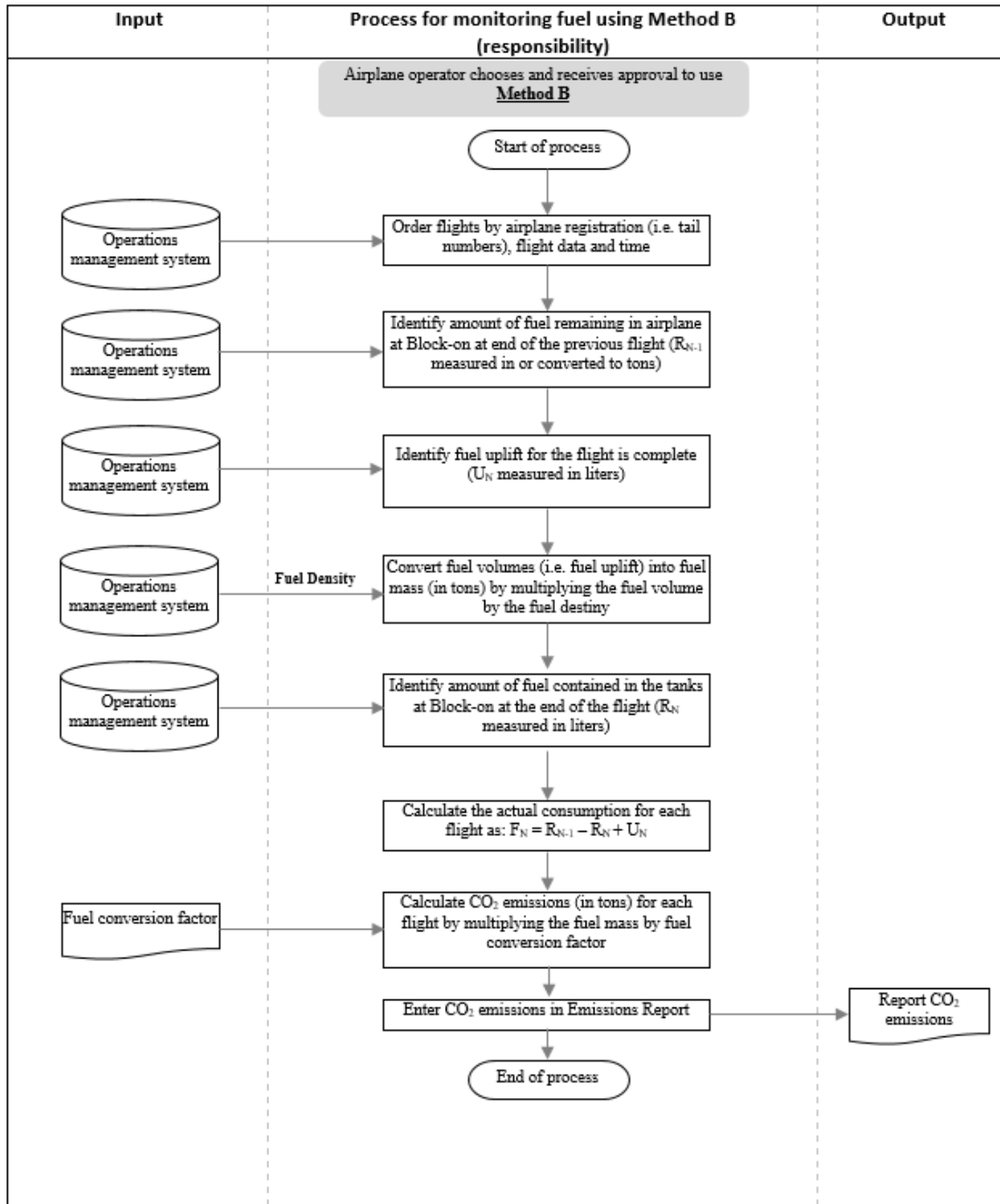


Figure B-8: Monitoring fuel use by flight using Method B

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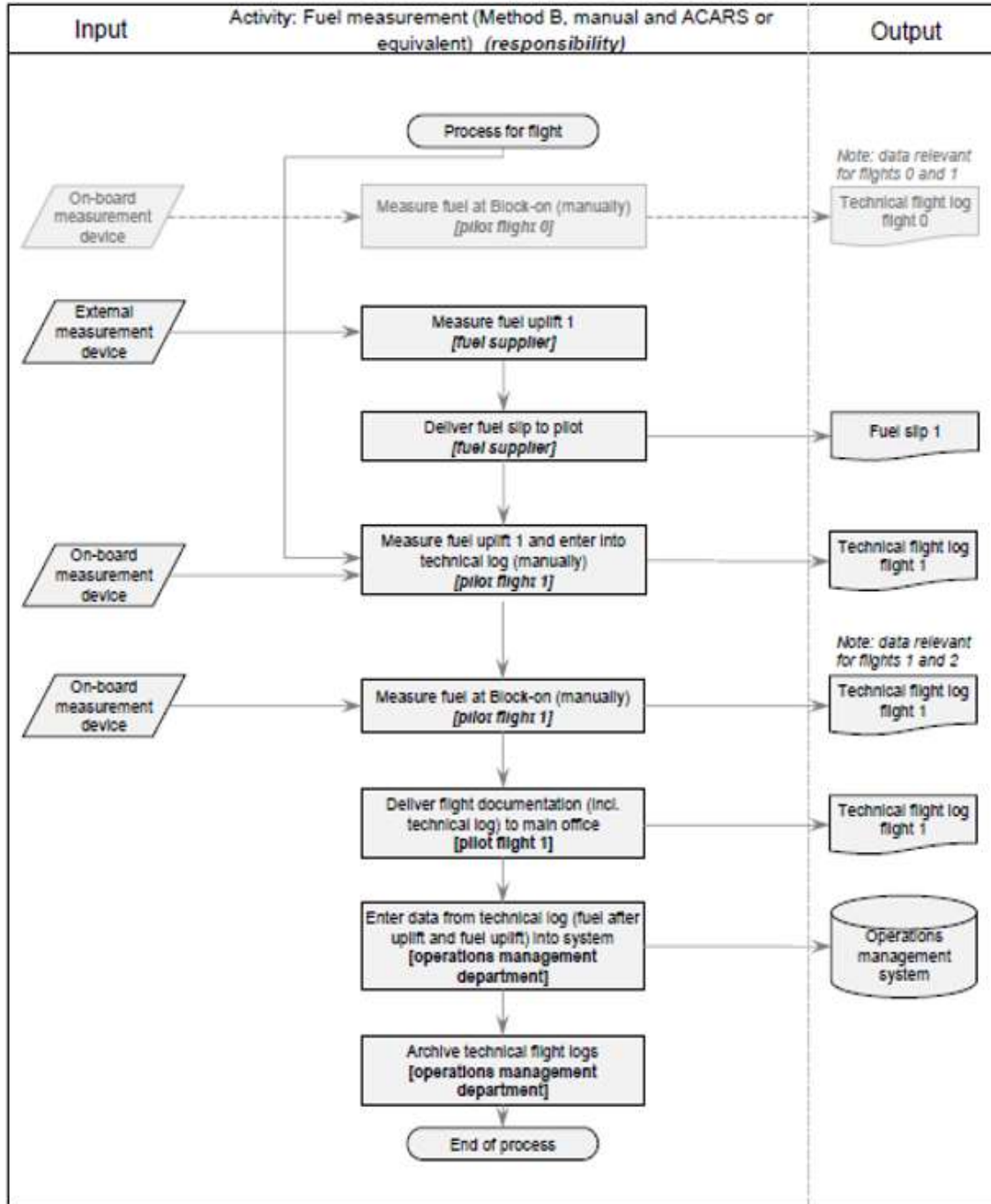


Figure B-9: Collection of required data to implement Method B with fuel uplift (manual process)

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Method 3: Block-off/Block-on

a. The third method is Block-off/Block-on, which is calculated using the equation in Figure B-4, using the fuel measurements of fuel at block-on before the flight in consideration and after the flight under consideration.

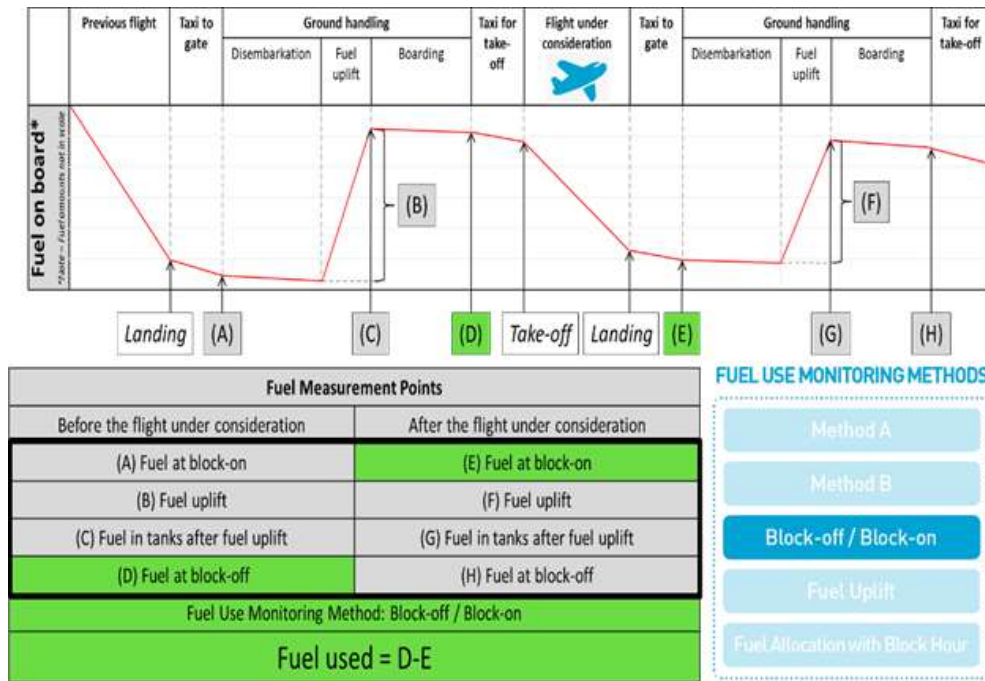


Figure B-10: Fuel measurement points for Block-off/Block-on.

i. Block-off / Block-on

a. Calculation

(1) The airplane operator must use the following formula to compute fuel use according to the Block-off / Block-on Method:

where:

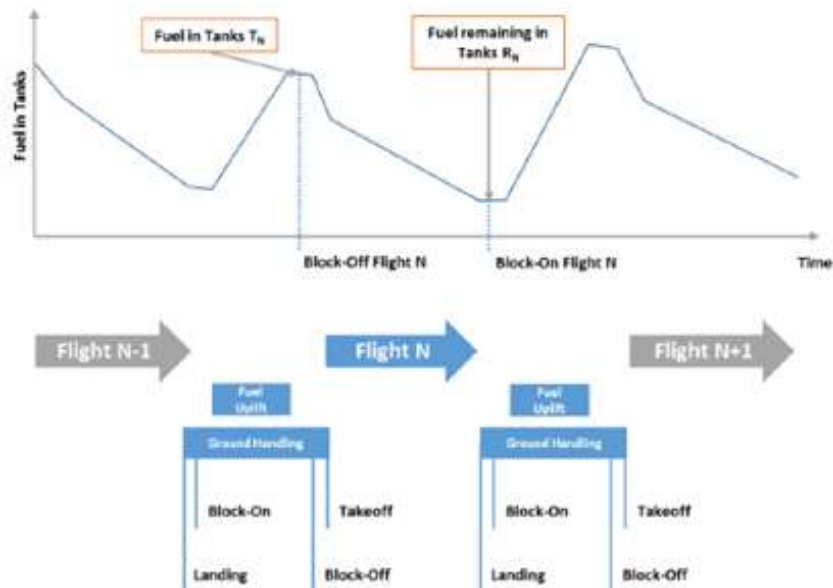
F_N = Fuel used for the flight under consideration (= flight N) determined using Block-off / Block-on Method (in tons);

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T_N = Amount of fuel contained in airplane tanks at Block-off for the flight under consideration i.e., flight N (in tons); and

R_N = Amount of fuel remaining in airplane tanks at Block-on of the flight under consideration i.e., flight N (in tons).

(2) This method requires data only from the flight under consideration. The data points (block-off, block-on) are commonly used in airplane operations.



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Figure 3-11. Fuel Use Monitoring Block-off/Block-on

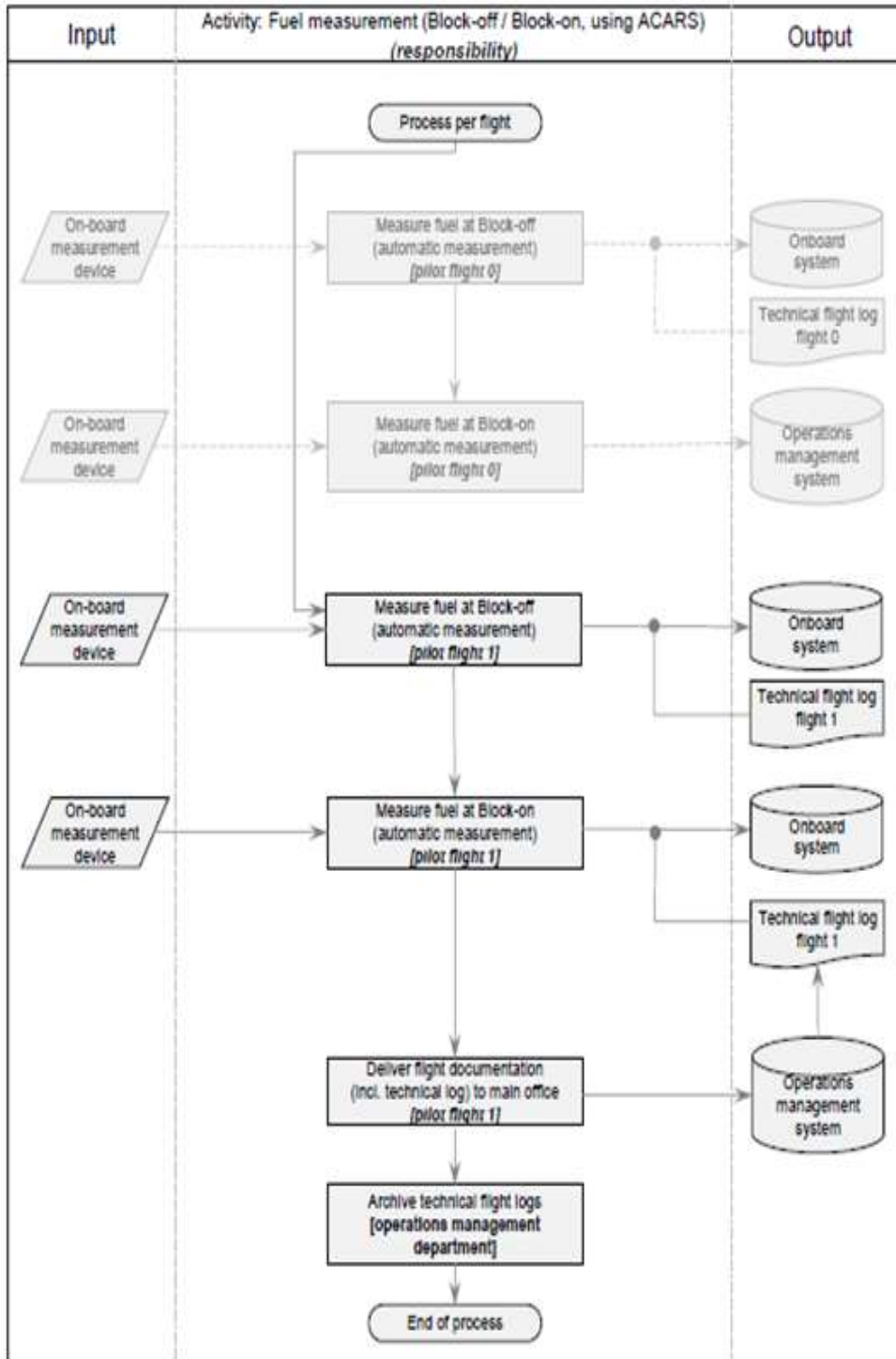
b. Illustration of calculation:

(1)The following table shows an illustration of calculation for the Block-off / Block-on Method.

Table B-3: Illustration of calculations of fuel use based on Block-off/Block-on Method

<i>Flight details</i>		<i>Fuel in Tanks (in tons)</i>		<i>Fuel use</i>
<i>Consecutive number</i>	<i>Date of flight</i>	<i>Off-block current flight</i>	<i>On-block current flight</i>	Block-off/block-on
N		T _N	R _N	F _N = T _N - R _N
1	28-Jan-16	94.5	8.5	86.0
2	29-Jan-16	51.8	5.8	46.0
3	29-Jan-16	32.7	9.7	23.0
4	30-Jan-16	9.5	4.0	5.5
5	30-Jan-16	75.0	4.5	70.5
...	31-Jan-16	-	-	-

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSAIA)

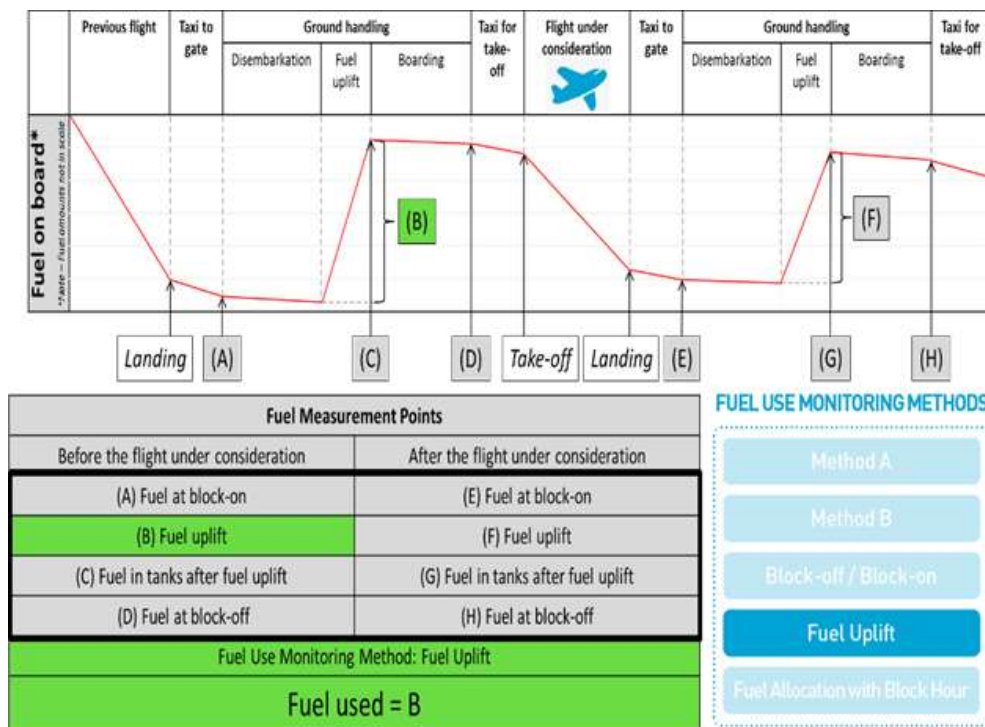


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Figure B-12: Collection of required data to implement Block-off / Block-on

Method 4: Fuel uplift

a. The fourth method is Fuel Uplift, which is calculated using the equation in Figure B-5, using the fuel measurement of fuel uplift.



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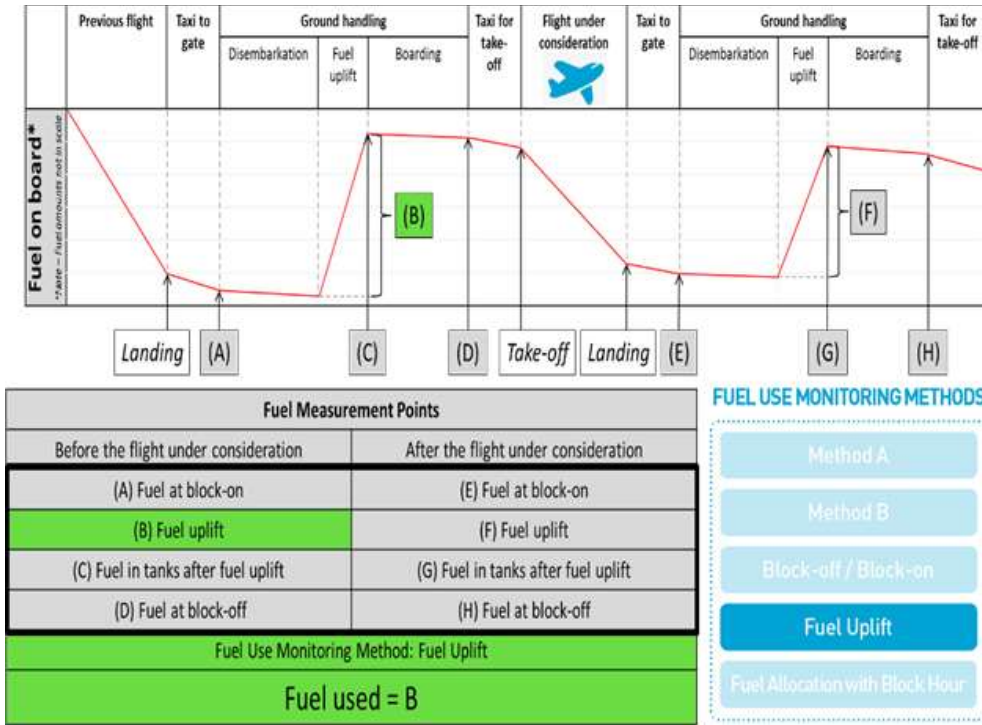


Figure B-13: Fuel measurement point for Fuel Uplift.

iv. Fuel Uplift

a. Calculation

(1) For flights with a fuel uplift unless the subsequent flight has no uplift, the airplane operator must use the following formula to compute fuel use according to the Fuel Uplift Method:

$$F_N = U_N$$

where:

F_N = Fuel used for the flight under consideration (i.e., flight N) determined using fuel uplift (in tons); and

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U_N = Fuel uplift for the flight considered, measured in volume and multiplied with a density value (in tons).

(2) For flight(s) without a fuel uplift (i.e., flight $N+1$, ..., flight $N+n$), the airplane operator must use the following formula to allocate fuel use from the prior fuel uplift (i.e., from flight N) proportionally to block hour:

$$F_N = U_N * \left[\frac{BH_N}{BH_N + BH_{N+1} + \dots + BH_{N+n}} \right]$$

$$F_{N+1} = U_N * \left[\frac{BH_{N+1}}{BH_N + BH_{N+1} + \dots + BH_{N+n}} \right]$$

...

$$F_{N+n} = U_N * \left[\frac{BH_{N+n}}{BH_N + BH_{N+1} + \dots + BH_{N+n}} \right]$$

where:

F_N = Fuel used for the flight under consideration (i.e., flight N) determined using fuel uplift (in tons);

F_{N+1} = Fuel used for the subsequent flight (i.e., flight $N+1$) determined using fuel uplift (in tons);

F_{N+n} = Fuel used for the follow-on flight (i.e., flight $N+n$) determined using fuel uplift (in tons);

U_N = Fuel uplift for the flight under consideration (i.e., flight N) (in tons);

BH_N = Block hour for the flight under consideration (i.e., flight N) (in hours);

BH_{N+1} = Block hour for the subsequent flight (i.e., flight $N+1$) (in hours);

BH_{N+n} = Block hour for the follow-on flight (i.e., flight $N+n$) (in hours).

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Note. —Fuel uplift is determined by the measurement by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight.

(3) This method requires data only from the flight under consideration. The only data point is the amount of fuel uplift per flight.

b. Case: Fuel uplift data available for flight under consideration (flight N):

(1) Amount of fuel uplift as measured by the supplier of the flight.

(2) The amount of fuel will be expressed as mass (in tons) in both cases.

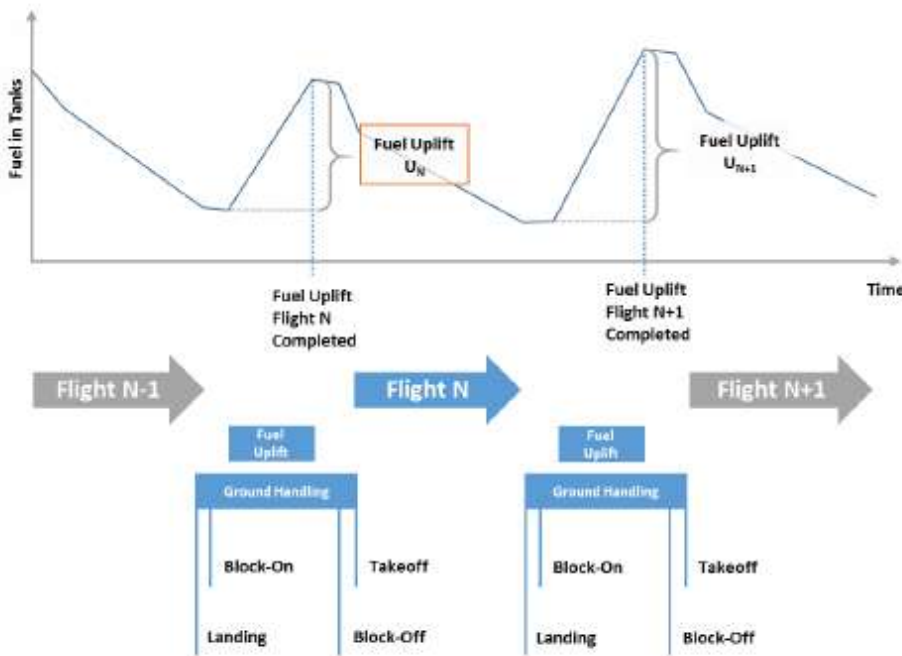


Figure B-14. Fuel use monitoring based on Fuel Uplift

c. Case: Allocation of fuel use in the case of flight under consideration (flight N) has no fuel uplift:

(1) If no fuel uplift takes place for the flight subsequent to the flight under consideration, the amount of fuel uplifted for the flight under consideration will be determined by distributing the fuel

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to both flights in proportion of the block-time of both flights, as shown in the chart below. For flight(s) without a fuel uplift (i.e., flight N+1, ... , flight N+n,) an airplane operator will use the following formula to allocate fuel use from the prior fuel uplift (i.e., from flight N) proportionally to block hour. This distribution will be done also if one of the flights is a domestic flight.

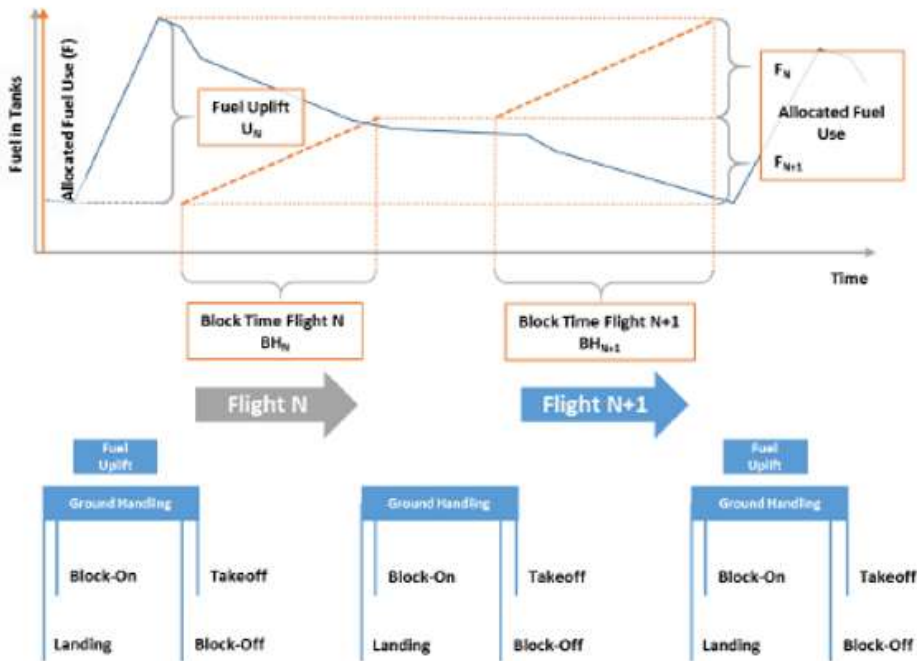


Figure B-15. Fuel Use Monitoring Method based on fuel uplift, allocation of fuel use

Note. —For the correct application of this method it is essential that all flights of a specific airplane be sorted in chronological order. The distinction between national and international flights will be made after the calculation of the fuel consumption per flight.

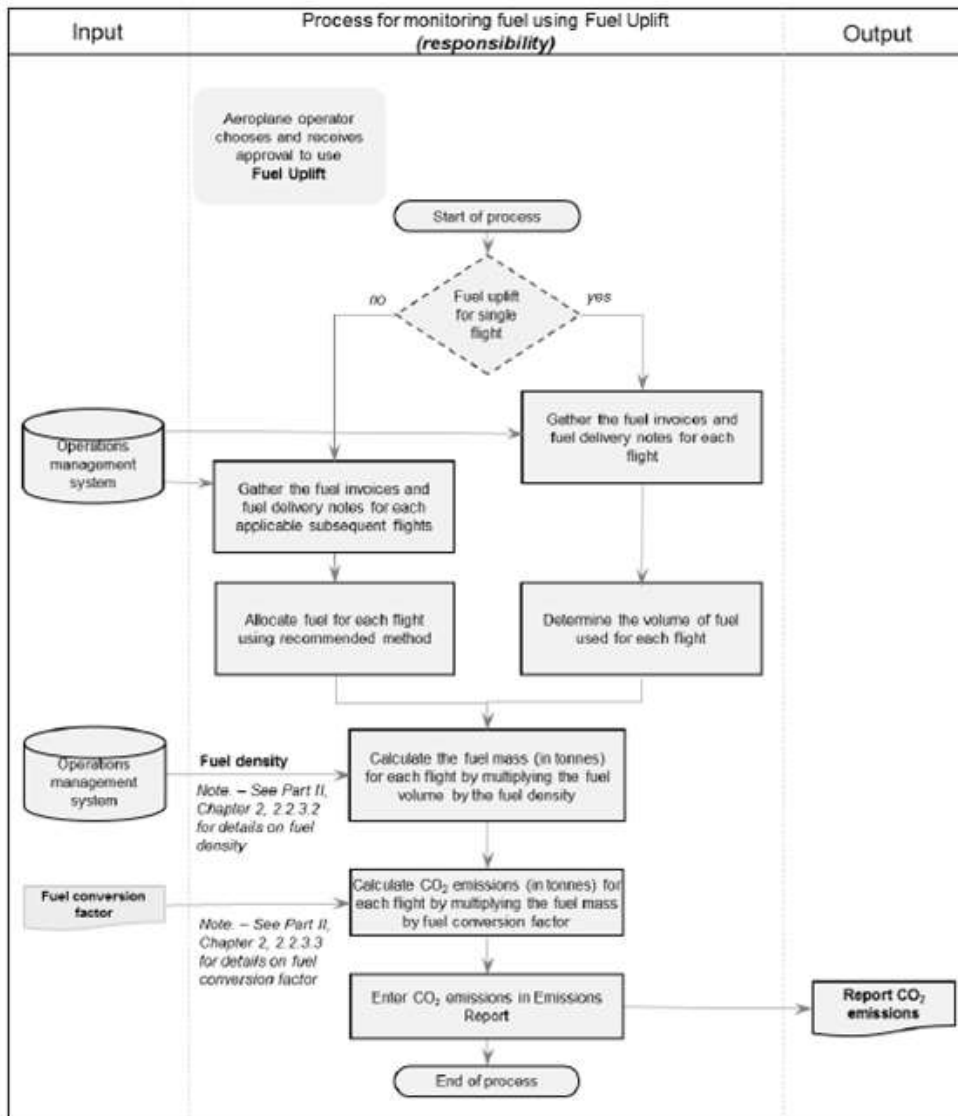
d. Illustrative calculation:

(1)The following table shows an illustrative calculation for the Fuel Uplift Method. Flights number 3 and 4 illustrate the distribution of fuel consumption due to the fact that flight number 4 has no fuel uplift.

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Table B-4. Illustration of calculations of fuel use based on Fuel Uplift Method

Flight details		Uplift (in tons)	Block hours	Fuel use
Consecutive number	Date of flight	Uplift quantity	Block-time (in hours)	Fuel uplift method
N		U_N	BH_N	$F_N = U_N$
1	28-Jan-16	89.3	11.8	89.3
2	29-Jan-16	43.3	6.5	43.3
3	29-Jan-16	26.9	3.1	20.8
4	30-Jan-16	-	0.9	6.1
5	30-Jan-16	71.7	9.5	71.7
...	31-Jan-16	-	-	-



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Figure B-16: Monitoring fuel use by flight using Fuel Uplift

Method 5: Fuel allocation with block hour.

a. The fifth method is Fuel allocation with block hour, which is calculated using the equation in Figure B-6, using the fuel measurement of fuel at block-on before the flight in consideration and after the flight under consideration.

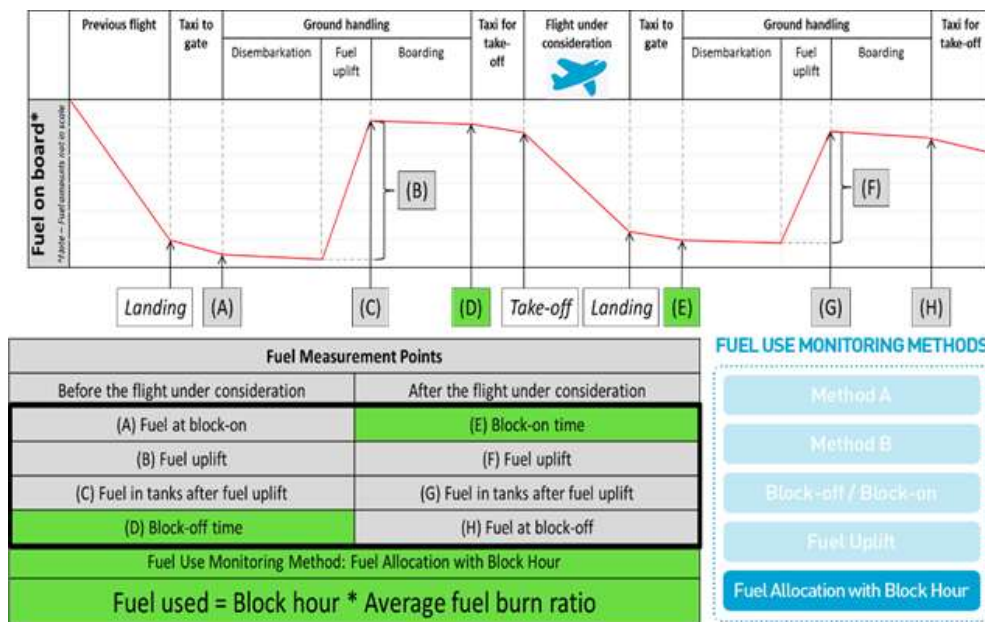


Figure B-17: Fuel measurement point for Fuel allocation with block hour.

v. Fuel Allocation with Block Hour

b. Computation of average fuel burn ratios

(1) For an airplane operator which can clearly distinguish between international and domestic fuel uplifts, the airplane operator must compute, for each airplane type, the average fuel burn ratios by summing up all actual fuel uplifts from international flights divided by the sum of all actual block hours from international flights for a given year according to the following formula:

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$$AFBR_{AO,AT} = \frac{\sum_N U_{AO,AT,N}}{\sum_N BH_{AO,AT,N}}$$

where:

$AFBR_{AO,AT}$ = Average fuel burn ratios for airplane operator (AO) and airplane type (AT) (in tons per hour);

$U_{AO,AT,N}$ = Fuel uplifted for the international flight N for airplane operator (AO) and airplane type (AT) determined using monitoring method Fuel Uplift (in tons); and

$BH_{AO,AT,N}$ = Block hour for the international flight N for airplane operator (AO) and airplane type (AT) (in hours).

(2) For an airplane operator which cannot clearly distinguish between international and domestic fuel uplifts, the airplane operator must compute, for each airplane type, the average fuel burn ratios by summing up all actual fuel uplifts from international and domestic flights divided by the sum of all actual block hours from these flights for a given year, according to the following formula:

$$AFBR_{AO,AT} = \frac{\sum_N U_{AO,AT,N}}{\sum_N BH_{AO,AT,N}}$$

where:

$AFBR_{AO,AT}$ = Average fuel burn ratios for airplane operator (AO) and airplane type (AT) (in tons per hour);

$U_{AO,AT,N}$ = Fuel uplifted for the international flight N for airplane operator (AO) and airplane type (AT) determined using monitoring method Fuel Uplift (in tons); and

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$BH_{AO, AT, N}$ = Block hour for the international flight N for airplane operator (AO) and airplane type (AT) (in hours).

(3) An airplane operator specific average fuel burn ratios must be calculated on a yearly basis by using the yearly data from the actual reporting year. The average fuel burn ratios must be reported, for each airplane type, in the airplane operator's Emissions Report.

Note 2. —Airplane types are contained in Doc 8643 — Aircraft Type Designators.

c. Computation of fuel use for individual flights

(1) The airplane operator must compute the fuel consumption for each international flight by multiplying the airplane operator specific average fuel burn ratios with the flight's block hour according to the following formula:

$$F_N = AFBR_{AO,AT} * BH_{AO,AT,N}$$

where:

F_N = Fuel allocated to the international flight under consideration (i.e., flight N) using the Fuel Allocation Block Hour method (in tons);

$AFBR_{AO, AT}$ = Average fuel burn ratios for Airplane operator (AO) and Airplane type (AT) (in tons per hour); and

$BH_{AO, AT, N}$ = Block hour for the international flight under consideration (=flight N) for Airplane operator (AO) and Airplane type (AT) (in hours).

Note 1. —Fuel uplift is determined by the measurement by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight.

Note 2. —The Verification Report of the external verification body includes an

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assessment of the Airplane operator specific average fuel burn ratio per ICAO aircraft type designator used.

Note 3. —Average fuel burn ratio (AFBR) based on all flights for a reporting year and rounded to at least three decimal places.

(2) Unlike the other methods, this method requires data from the flight under consideration as well as data from other flights of a specific airplane type of the reporting year.

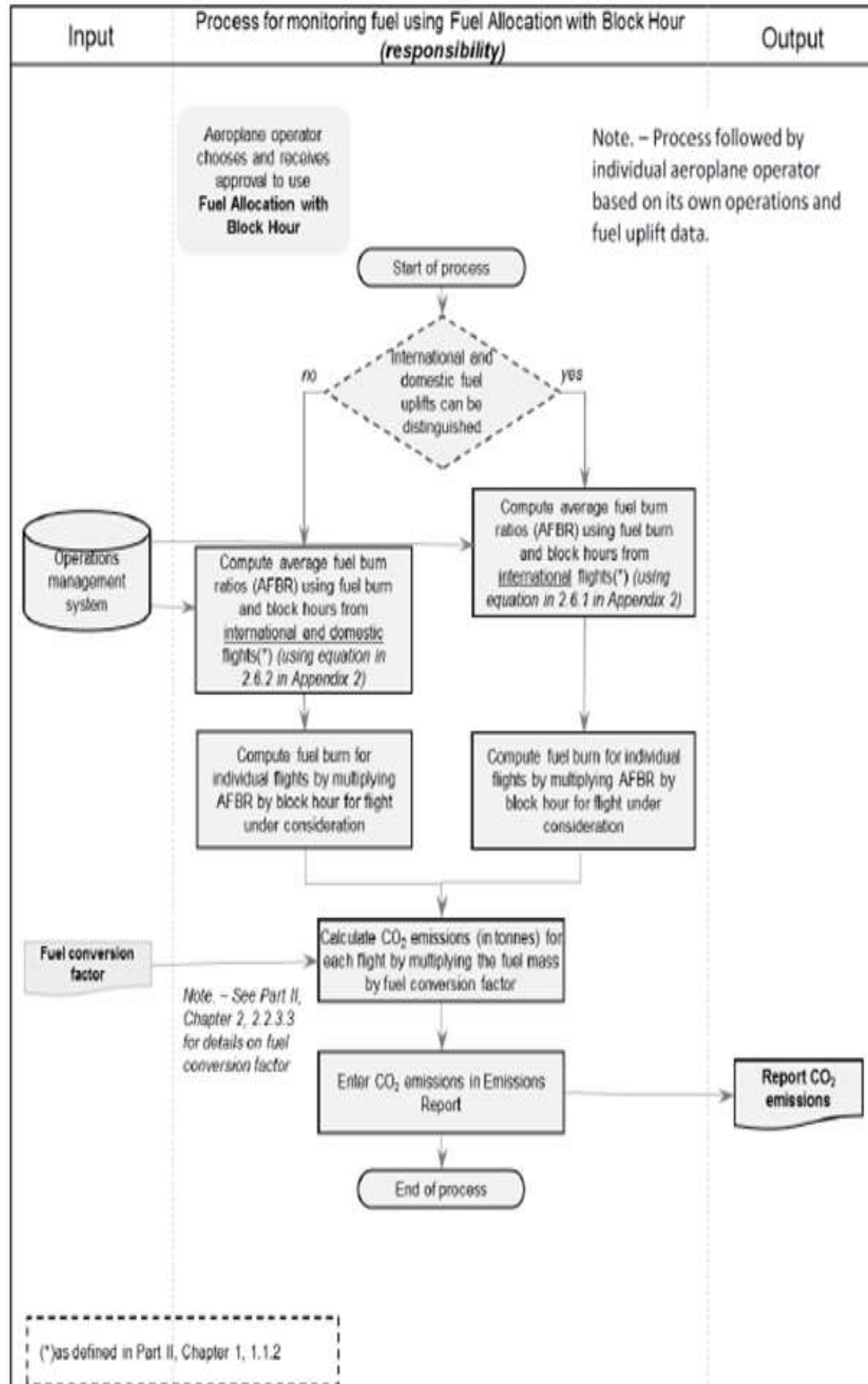
d. Illustrative calculation:

(1) The following table shows an illustrative calculation for the fuel allocation with Block Hour Method (the assumed average fuel burn (AFBR) is 7 270 tons/h).

Table B-5: Illustration of calculations of fuel use based on fuel allocation with Block Hour Method

Flight details		Block hours	Fuel use i.e., allocation with block hour (in tons)
Consecutive number	Date of flight	Block-time (in hours)	
N		BH _N	F _N = AFBR _{AT} * BH _{AT,N}
1	28-Jan-16	11.8	85.8
2	29-Jan-16	6.5	47.3
3	29-Jan-16	3.1	22.5
4	30-Jan-16	0.9	6.5
5	30-Jan-16	9.5	69.1
...	31-Jan-16	-	-

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Figure B-18: Monitoring fuel use by flight using Fuel Allocation with Block Hour

(2) A verification body must cross-check whether the emissions reported are reasonable in comparison to other fuel related data of the airplane operator.

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APPENDIX C: EMISSIONS MONITORING PLAN

a. The Emissions Monitoring Plan (EMP) details the procedures and systems that airplane operators use for monitoring CO₂ emissions. The EMP must be submitted to GACA for approval. It contains the following information:

- (1) Airplane operator identification
- (2) Fleet and operations data
- (3) Methods and means of calculating emissions from international flights
- (4) Data management, data flow and control

b. The format for the EMP can be found below and on the GACA website.

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CORSA

EMISSIONS MONITORING PLAN (EMP)

CONTENTS

- [1 Version control of Emissions Monitoring Plan](#)
- [2 Airplane operator identification and description of activities](#)
- [3 Fleet and operations data](#)
- [4 Methods and means for calculating emissions](#)
 - [4.1 Fuel Use Monitoring Method: Method A](#)
 - [4.2 Fuel Use Monitoring Method: Method B](#)
 - [4.3 Fuel Use Monitoring Method: Block-off / Block-on](#)
 - [4.4 Fuel Use Monitoring Method: Fuel Uplift](#)
 - [4.5 Fuel Use Monitoring Method: Fuel Allocation with Block Hour](#)
 - [4.6 ICAO CORSIA CO₂ Estimation and Reporting Tool \(CERT\)](#)
- [5 Data management, data flow, control system, risk analysis and data gaps](#)

Template Information

Template provided by:	
Version (publication date):	

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1 VERSION CONTROL OF EMISSIONS MONITORING PLAN

a) Version No.

Please enter version number of the current version.

b) Version control

If necessary, please fill in the table.

Version No.	No. of previous version	Date of update	Emissions Monitoring Plan is valid from	Chapters where modifications have been made. Brief explanation of amendments.

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**2 AIRPLANE OPERATOR IDENTIFICATION AND
 DESCRIPTION
 OF ACTIVITIES**

a) Name of the airplane operator

Please enter the name of the airplane operator. This name should be the legal entity engaged in the airplane operation, or the legal entity seeking to be the single entity for the CORSIA administration under a parent-subsidiary arrangement.

--

b) Address of the airplane operator

Please enter the address of the airplane operator.

Address line:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

c) Legal representative

Please enter a contact address of a representative who is legally responsible for the airplane operator for official correspondence.

Title:	
First name:	
Surname:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

d) Aircraft identification of the airplane operator for international flights (Item 7 of the flight plan)

Select the options planned to be used for reporting flight attribution to the airplane operator.

ICAO Designator

Does Item 7 (aircraft identification) of the flight plan begin with an ICAO Designator according to Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services? If yes, please select "ICAO Designator" from the drop down list and complete d2).

Registration marks

Does Item 7 (aircraft identification) of the flight plan correspond to the nationality or common mark, and registration mark, as explicitly stated in an AOC (or equivalent)? If yes, please select "Registration marks" from the drop down list and complete d3).

ICAO Designator and registration marks¹

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d1) Responsibility under the CORSIA

d2) ICAO Designator

Provide the ICAO Designator (or Designators) used for Air Traffic Control purposes, as listed in Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services, if the airplane operator has an ICAO Designator(s).

d3) List of registration marks

Please list all airplanes including the nationality or common mark, and registration mark, of the airplane. If your fleet exceeds 30 registration marks, please attach a separate document to the EMP.

No.	Registration mark	No.	Registration mark
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	

d4) Additional information on flight attribution

Please provide additional information to support the approach followed for flight attribution.

e) Do you have an air operator certificate (AOC)?

The air operator certificate (AOC) is a certificate authorizing an operator to carry out specified commercial air transport operations i.e., a document issued to an airplane operator by a Civil Aviation Authority which affirms that the airplane operator in question has the professional ability and organization to secure the safe operation of the airplane for the aviation activities specified in the certificate.

e1) Identification code of the AOC

Please enter the unique identification number of the air operator certificate of the issuing Civil Aviation Authority. If you hold several AOCs, list the additional certificates in the field "Information about the certificate".

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e2) Date of issue

Please enter the date on which the air operator certificate was issued. Use the entry format ~~yyyy~~-mm-dd.

e3) Date of expiry

Please enter the date on which the air operator certificate expires (if applicable). Use the entry format ~~yyyy~~-mm-dd.

e4) Competent authority for the AOC

Please enter the address of the authority that issued the AOC.

Name of the authority:	
Address line:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

e5) Information about the certificate

Please give information about the scope of aviation activities the AOC permits to carry out. Are there any temporal, regional or other restrictions? Have any obligations been imposed?

e6) Please attach the current versions of the AOCs covered in this Emissions Monitoring Plan; please confirm below

f) Description of the ownership structure of your company

Details of ownership structure relative to any other airplane operators with international flights, including identification of whether the airplane operator is a parent company to other airplane operators with international flights, a subsidiary of another airplane operator (or operators) with international flights and/or has a parent and or subsidiaries that are airplane operators with international flights. Please describe the ownership structure of the operating company.

f1) Parent-subsidiary relationship recognized as a single entity for the CORSIA administration?

Please specify whether the airplane operator is in a parent-subsidiary relationship which should be recognized as a single entity for the CORSIA administration?

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f2) Name of the subsidiary company(ies)

If your company heads a group, please specify the names of the subsidiaries which also carry out international aviation activities and select how aircraft identification of the subsidiary for international flights is managed. Where appropriate, please attach additional explanatory files to the Emissions Monitoring Plan.

Name of the subsidiary	Aircraft identification of the subsidiary for international flights (Item 7 of the flight plan)

f3) Confirmation that parent and subsidiary(ies) are administered by the same State

If the airplane operator in a parent-subsidiary relationship seeks to be considered a single airplane operator for purposes of the CORSIA, confirm that the parent and subsidiary(ies) are subject to CORSIA administration by the same State.

f4) Confirmation that parent and subsidiary(ies) are wholly-owned by the parent

If the airplane operator in a parent-subsidiary relationship seeks to be considered a single airplane operator for purposes of the CORSIA, confirm that the subsidiary(ies) are wholly-owned by the parent.

f5) Additional information on the subsidiary(ies)

Step 1: On the basis of the provided information in f3), please specify the aircraft identification of the subsidiary(ies) for international flights (Item 7 of the flight plan) according to the same level of detail as requested in d) (e.g., state ICAO Designator or list registration marks). Please indicate how flights are assigned to the parent/subsidiary operation.

Step 2: Please specify whether there are any other items covered in this Emissions Monitoring Plan where the subsidiary(ies) deviate from the monitoring of the parent.

In case of insufficient space below, please attach additional documents to your Emissions Monitoring Plan submission.

g) Description of the airplane operator's activities

*Please describe the airplane operator's activities. Provide details of main State pairs, typical leasing arrangements, scheduled/non-scheduled, **pass**/cargo/executive and geographic scope of operations.*

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h) Contact person

Please enter the contact information of the person within the airplane operator who is responsible for the Emissions Monitoring Plan.

Title:	
First name:	
Surname:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

h1) Alternate contact person

Please enter the contact information of an additional person within the airplane operator who is responsible for the Emissions Monitoring Plan.

Title:	
First name:	
Surname:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

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3 FLEET AND OPERATIONS DATA

a) Fleet declaration

List all airplane types, including owned airplanes as well as leased airplanes, with an MTOM greater than 5,700 kg (12,566 lbs.) operated on international flights at the time of submission of the Emissions Monitoring Plan as specified in Doc 8643 — Aircraft Type Designators.

Additional information about Doc 8643 — Aircraft Type Designators can be found at:

<http://www.icao.int/publications/DOC8643/Pages/Search.aspx>

No.	ICAO type designator	Fuel type	Number of airplanes
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

b) Additional airplane types

Will new airplane types always be monitored using the same methods as airplane types identified in section 4 of this plan?

b1) Details about the procedure for defining the monitoring methodologies for additional airplane types

Define clearly the methods which are used for monitoring new airplane types that are not already in use.

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Responsible department	
Description of procedure	
Location of records	

c) Changes in airplane fleet and fuel type

Please provide information on the procedure for how changes in airplane fleet and fuel used will be tracked and integrated in emissions monitoring.

Responsible department	
Description of procedure	
Location of records	

d) Completeness of all airplanes and all flights

Please provide information on the means that will be used to track/document each airplane operated and the specific flights of the airplane to ensure completeness of monitoring.

Responsible department	
Description of procedure	

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Location of records	

e) List of State pairs operated by the airplane operator

Please list all State pairs where international flights are currently operated. If applicable, please list State pairs from the State of origin to the State of destination (*). If your State pairs exceed 50, please attach a separate document to the Emissions Monitoring Plan.

(*). For example, flights from State A to State B will require inserting a State pair A-B in the list; flights from State B to State A will require inserting a State pair B-A in the list.

No.	State of origin	State of destination
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

f) Determination of all international flights

Please provide information on procedures for determining which airplane flights meet the definition of international flights for the purpose of GACAR 157, and therefore are subject to the emissions monitoring requirements subject to applicability of GACAR 157, Subpart C, 157.21.

Responsible department	
Description of procedure	

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Location of records	

g) Determination of international flights with offsetting requirements

Please provide information on the procedures for determining which international flights are subject to CO₂ offsetting requirements under the CORSIA as described in GACAR 157, Subpart C, 157.33.

Responsible department	
Description of procedure	
Location of records	

h) Determination of flights with no monitoring requirements

If the airplane operator conducts any domestic flights and/or humanitarian, medical or firefighting international operations that would not be subject to the emissions monitoring requirements, information on the procedures for how those operations will be separated from those subject to the emissions monitoring requirements.

Responsible department	
Description of procedure	

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Location of records	

4 METHODS AND MEANS FOR CALCULATING EMISSIONS

a) Fuel Use Monitoring Method and / or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)

Please specify whether the airplane operator plans to use one or more Fuel Use Monitoring Method(s) and / or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) for the 2019-2020 and 2021-2035 periods. When deciding on the monitoring method, consideration should be given to whether the airplane operator is eligible for the same method in the 2019-2020 period as in the 2021-2035 period.

For the reporting years 2019 and 2020

- a Fuel Use Monitoring Method is mandatory for airplane operators with annual emissions equal to or above 500,000 tons of CO₂ from international flights.
- an airplane operator with annual CO₂ emissions from international flights of less than 500,000 tons, must use either a Fuel Use Monitoring Method or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT).

For the reporting years 2021 until 2035

- a Fuel Use Monitoring Method is mandatory for airplane operators with annual emissions equal to or above 50,000 tons of CO₂ from international flights subject to offsetting requirements. For international flights not subject to offsetting requirements, the airplane operator must use either a Fuel Use Monitoring Method or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT).
- an airplane operator with annual emissions from international flights subject to offsetting requirements of less than 50,000 tons, must use either a Fuel Use Monitoring Method or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT).

a1) Option for simplified monitoring on routes not subject to offsetting requirements

Airplane operators which use a Fuel Use Monitoring Method for the 2021-2035 period have an option for simplified monitoring with the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) on State pairs not subject to offsetting requirements. Please specify whether the airplane operator intends to use this option.

b) Fuel Use Monitoring Methods

Please provide information on the use of different monitoring methods per sub fleet (by ICAO aircraft type designator).

Monitoring method	Applicable for the following sub-fleets of airplanes (by ICAO aircraft type designator)	2019-2020 period	2021-2035 period
Method A			
Method B			
Block-off / Block-on			
Fuel Uplift			

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Fuel Allocation with Block Hour			
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c) Simplified monitoring method

Please provide information on use of the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT).

2019-2020 period	2021-2035 period

c1) Estimated annual CO₂ emissions

Please demonstrate the eligibility to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) by providing an estimate of fuel use in order to calculate an estimate of the total CO₂ emissions for international flights. If the ICAO CORSIA CERT was used to estimate the CO₂ emissions, enter the information in the field "Estimate from the ICAO CORSIA CERT". For 2019, the estimate can be based on data within the 2017-2018 period or another appropriate period.

Fuel type	Annual fuel use (in tons)	Fuel conversion factor	Annual CO ₂ emissions (in tons)
Jet-A		3.16	
Jet-A1		3.16	
Jet-B		3.10	
AvGas		3.10	
Estimate from the ICAO CORSIA CERT			

c2) Supporting information on estimation

Provide supporting information on how the estimation of emissions in c1) has been determined, including on how fuel use has been estimated. In case the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) has been used, a copy of the tool has to be attached and the input method (i.e., Great Circle Distance or Block Time) has to be stated.

c3) Input method for reporting

Please specify for the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) whether Great Circle Distance or Block Time is used to estimate emissions for the reporting periods.

d) Separation of parent-subsidiary related emissions in 2019-2020

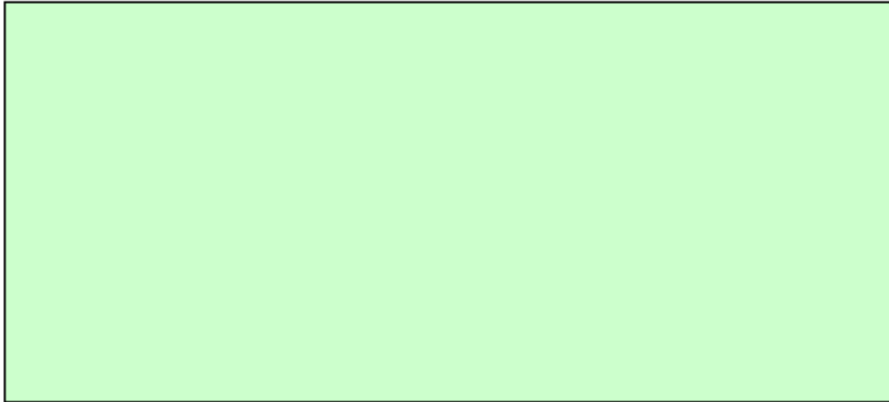
If the airplane operator is in a parent-subsidiary relationship and intends to be considered a single airplane operator for purposes of the CORSIA, identify the procedures that will be used for maintaining separate 2019-2020 fuel and emissions monitoring of the various corporate entities for the purpose of establishing individual 2019-2020 reference CO₂ emissions for the parent and subsidiary (or subsidiaries).

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4.1 Fuel Use Monitoring Method: METHOD A

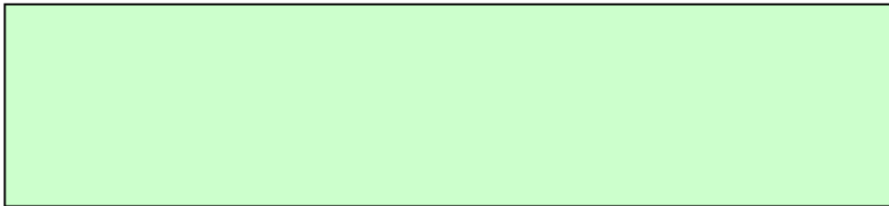
a) Time of measurement and corresponding documentation for the chosen method

Please specify the exact points in time for the three measurements necessary to calculate the fuel consumption per flight and outline the measurement equipment and procedures for recording, receiving, transmitting and storing of fuel data. Please provide a reference to the corresponding documentation.



b) Fuel density for international flights

Please provide information on the procedures for determining and recording fuel density values (standard or actual) as used for operational and safety reasons and provide reference to the relevant internal documentation. These procedures must be applied when calculating the fuel consumption for the CORSA.



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4.2 Fuel Use Monitoring Method: METHOD B

a) Time of measurement and corresponding documentation for the chosen method

Please specify the exact points in time for the three measurements necessary to calculate the fuel consumption per flight and outline the measurement equipment and procedures for recording, receiving, transmitting and storing of fuel data. Please provide a reference to the corresponding documentation.

b) Fuel density for international flights

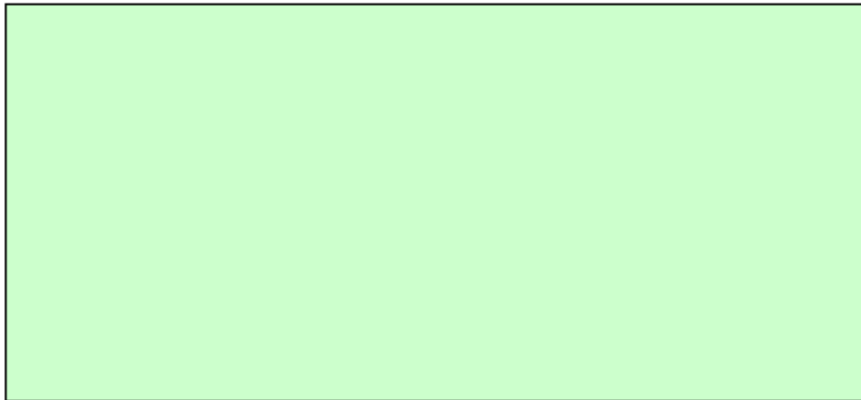
Please provide information on the procedures for determining and recording fuel density values (standard or actual) as used for operational and safety reasons and provide reference to the relevant internal documentation. These procedures must be applied when calculating the fuel consumption for the CORSIA.

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4.3 Fuel Use Monitoring Method: BLOCK-OFF / BLOCK-ON

a) Time of measurement and corresponding documentation for the chosen method

Please specify the exact points in time for the two measurements necessary to calculate the fuel consumption per flight and outline the measurement equipment and procedures for recording, receiving, transmitting and storing of fuel data. Please provide a reference to the corresponding documentation.



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4.4 Fuel Use Monitoring Method: FUEL UPLIFT

a1) Measurement of the block hours (per flight) and corresponding documentation for the chosen method

Please specify the exact points in time for the measurement of block hours per flight (necessary to calculate the fuel consumption per flight for international flights with zero uplift and for the following flight) and outline the measurement equipment and procedures for recording, receiving, transmitting and storing of fuel data. Please provide a reference to the corresponding documentation.

a2) Assignment and adjustment for flights with zero fuel uplift

Please explain the data handling and calculations necessary to meet the adjustment requirement for flights with zero fuel uplift.

b) Fuel uplift

Please specify which fuel uplift record will be used.

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c) Fuel density for international flights

Please provide information on the procedures for determining and recording fuel density values (standard or actual) as used for operational and safety reasons and provide reference to the relevant internal documentation. These procedures must be applied when calculating the fuel use for the CORSA.

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4.5 Fuel Use Monitoring Method: fuel allocation with block hour

a) Option for calculating the specific fuel burn

Please choose from the options listed below and enter the ICAO type designators and the model for each option. Should one option for all airplane types be used, simply enter "all".

	Option	ICAO aircraft type designator / model
<input type="checkbox"/>	1 st Option for airplane operators which can clearly distinguish between fuel uplifts for international and domestic flights on a flight by flight basis. In case this option is selected, please also complete section 4.4 (Fuel uplift, a1 and a2), as this monitoring method is used to calculate the total fuel burn on international flights for a specific ICAO type designator or aircraft model.	
<input type="checkbox"/>	2 nd Option for airplane operators which cannot clearly distinguish between international and national fuel uplifts on a flight by flight basis.	

b) Measurement of the block hours (per flight) and corresponding documentation for the chosen method

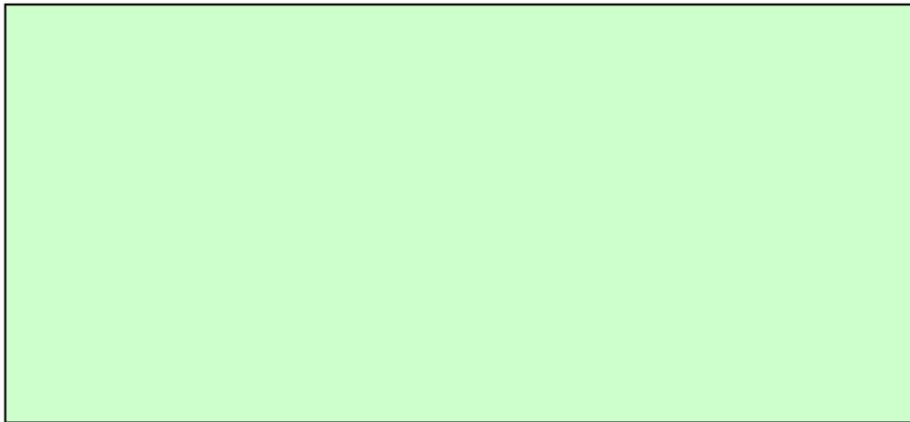
Please specify the exact points in time for the measurement of block hours per flight and outline the measurement equipment and procedures for recording, receiving, transmitting and storing of fuel data. Please provide a reference to the corresponding documentation.

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
INTERNATIONAL AVIATION (CORSIA)

**4.6 ICAO CORSIA CO₂ ESTIMATION AND REPORTING TOOL
(CERT)**

a) Description of relevant input data

Please specify whether Great Circle Distance and/or Block Time is used as input into the ICAO CORSIA CERT. If applicable, please specify the procedures for determining Block Time and potentially aggregating them to be used in the ICAO CORSIA CERT. This includes specifying the exact points in time for the two time measurements per flight necessary to calculate the Block Time.

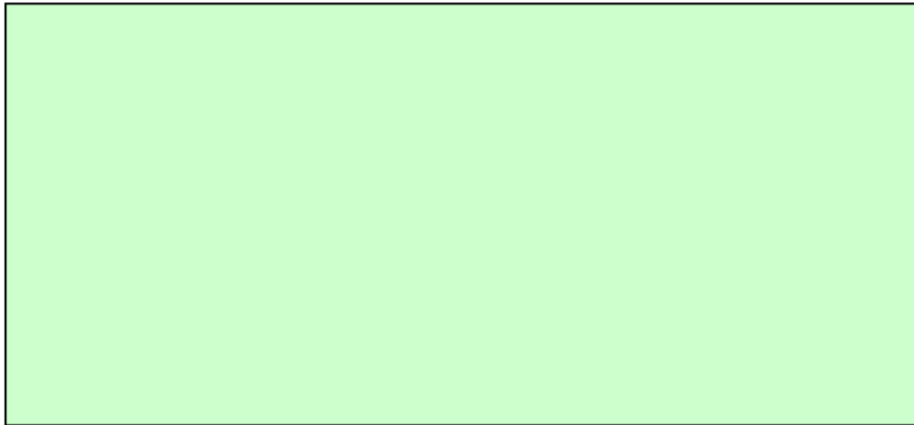


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INTERNATIONAL AVIATION (CORSA)

**5. DATA MANAGEMENT, DATA FLOW, CONTROL
SYSTEM, RISK ANALYSIS AND DATA GAPS**

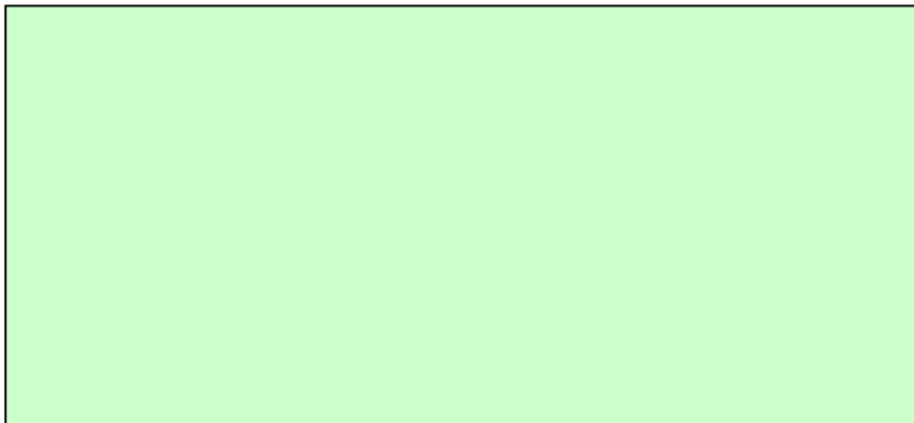
a) Description of data management

Please provide a description of each step in the data flow and data processing, including controls to assure data quality, beginning with the source data up to the Emissions Report. Please reference the responsible departments. Please attach a data flow chart to the Emissions Monitoring Plan summarizing the systems used to record, store and control the quality of data associated with the monitoring and reporting of emissions.



b) Threshold for data gaps

If employing a Fuel Use Monitoring Method, please provide a description of the systems and procedures for identifying data gaps and for assessing whether the 5 per cent threshold for significant data gaps has been reached.



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INTERNATIONAL AVIATION (CORSA)

b1) Description of available secondary sources

Please specify data sources that can be alternatively used for reporting purposes.

b2) Handling of data gaps and erroneous data values

Airplane operators using a Fuel Use Monitoring Method must use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) to fill data gaps, where the secondary data sources listed above are not available. For airplane operators not using a Fuel Use Monitoring Method, please provide a description of the method that will be used to fill data gaps in the event a secondary data reference source listed above is not available.

b3) Data gaps despite secondary sources

Does the existing data management system allow for data gaps when secondary data sources exist?

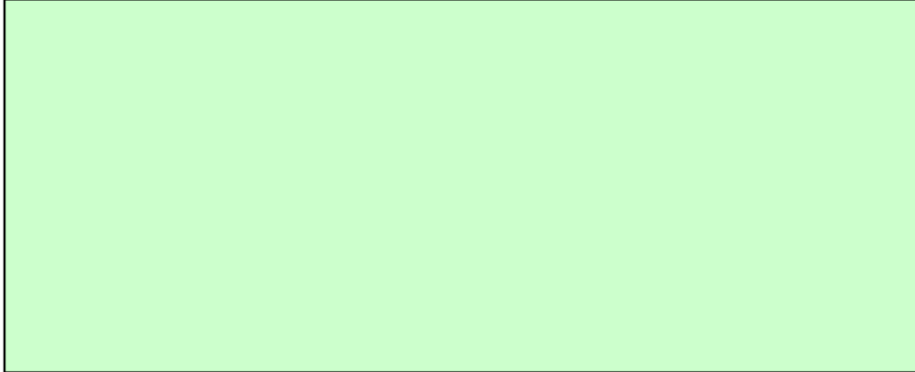
b4) Explanations of data gaps for which existing secondary sources cannot be used

Please describe the conditions (e.g., cost, time to resolve, data availability, data quality) under which this occurs.

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
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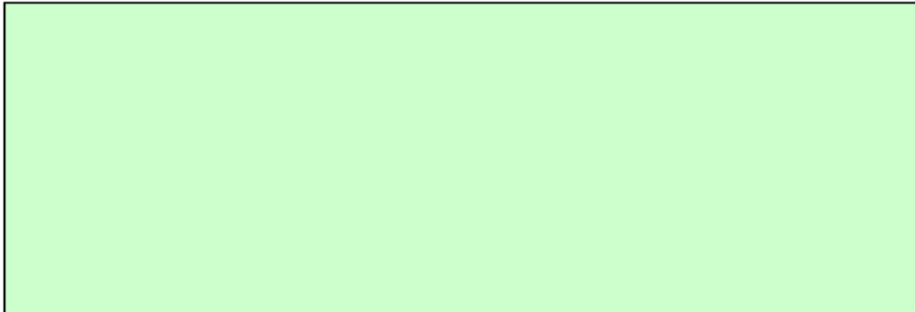
c) Documentation and record keeping plan

Please specify where process directives are stored. Please indicate the IT system used, if applicable. List of applied data management and IT standards, where relevant.



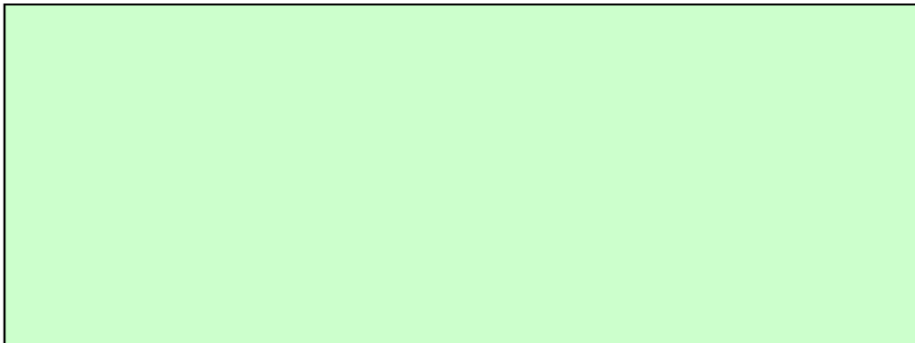
d) Explanation of risks

Data management systems and controls are critical for ensuring data completeness, security, quality and minimizing the risk of a material error or misstatement in the emissions report. Please provide a list of the risks associated with the data management system and the corresponding internal or external control activity(ies) for addressing each.



e) Revisions of Emissions Monitoring Plan

Please provide information on procedures for identifying: i) material changes to the Emissions Monitoring Plan requiring revision and resubmission to the State and ii) non-material changes to the Emissions Monitoring Plan for disclosure in the Emissions Report.



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Carbon Estimation and Reporting Tool (CERT)

- a. The ICAO CORSIA CERT is developed for, and made available to, airplane operators to support the monitoring and reporting of their CO₂ emissions. Airplane operators can use ICAO CORSIA CERT for the following purposes:
- (1) Assess whether MRV requirements are applicable to them.
 - (2) Assess whether they are eligible to use the ICAO CORSIA CERT for monitoring CO₂ emissions in the 2019-2020 period
 - (3) Produce a summary assessment that can be appended to the airplane operator's Emissions Monitoring Plan.
- b. The explanation on how to use the CERT is available in the AC 157-01 Chapter 4. The format can be found below and on the ICAO CORSIA website.



CORSA
|
CO₂ Estimation & Reporting Tool (CERT)
Version 2018

Custom aircraft and airport information

Back to Step 2

Steps: This "Custom Aircraft and Airport Information" function should only be used when aircraft and/or airport codes entered under the "Step 2. CO₂ Emissions Estimation" are not listed in ICAO CORSIA CERT version of the ICAO Doc. 8643 and 7918.

- A Check "Step 2. CO₂ Emissions Estimation" for any error/warning flags. If aircraft and/or airport codes are not found, then follow Steps B and C.
- B Enter Custom Aircraft below in the Custom_AC_AF worksheet.
- C Enter Custom Airport below in the Custom_AC_AF worksheet.

Once needed complementary information is entered, to go back to CO₂ Estimation page, click on ->

CO₂ Estimation

Custom Aircraft Information

Aircraft Type		Average MTOM of Aircraft in the Fleet	Fuel at Intercept	Fuel Rate
Designator or Custom Aircraft Code	Aircraft Category (select from drop down list below)	(in kg)	(in kg)	(in kg/km)

Custom Airport Information

Custom Airport Code	Airport Name	Latitude	Longitude	ICAO Member State	Suggested ICAO Member State
OMDW					United Arab Emirates
GOBO					Senegal

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)



CORSA | CO₂ Estimation & Reporting Tool (CERT)

Version 2018

Searchable ICAO CORSIA CERT databases of aircraft types and airports

[Back to Step 2](#)

Search functionalities below provide information on aircraft types and airports available in the ICAO CORSIA CERT version 2018 databases. This spreadsheet is provided as supplemental information to enter necessary input in the CO₂ Estimation page.

Aircraft types in the ICAO CORSIA CERT database

Search by aircraft type designator:	Example of aircraft model:	Manufacturer:	Engine type:
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Search by (example of) aircraft model:	Aircraft type designator:	Manufacturer:	Engine type:
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Airports in the ICAO CORSIA CERT database

Search by airport code:	Airport name:	ICAO Member State:
<input type="text"/>	<input type="text"/>	<input type="text"/>
	Latitude:	Longitude:
	<input type="text"/>	<input type="text"/>
Search by airport name:	Airport code:	ICAO Member State:
<input type="text" value="DUBAI INTERNATIONAL"/>	<input type="text" value="OMDB"/>	<input type="text" value="United Arab Emirates"/>
	Latitude:	Longitude:
	<input type="text" value="25.2528"/>	<input type="text" value="55.3644"/>

[Back to CO₂ Estimation](#)

**EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
INTERNATIONAL AVIATION (CORSA)**

**EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
INTERNATIONAL AVIATION (CORSA)**

APPENDIX D: REPORTING

a. The procedures specified in this appendix are concerned with reporting requirements under Subpart B, C and D of GACAR 157.

b. The airplane operators must submit these following reports to GACA:

- (1) Airplane information form (format below) within 1 month of qualifying for CORSIA.
- (2) EMP (see Appendix B) within 3 months of qualifying for CORSIA.
- (3) Emissions report (format below), due annually by 31st of May.
- (4) Supplementary information to emissions report for use of CORSIA eligible fuels (format below), due annually by 31st of May.
- (5) Verified emissions report (description), due annually by 31st of May
- (6) Verified emissions unit cancellation report (description), due annually 30th of April after offsetting starts.
- (7) Verification report template (format below), for use by verification firm, due annually by 31st of May.

I. Airplane information form:

a. Airplane operators are required to submit to GACA the below information within one month of qualifying for CORSIA.

**EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
 INTERNATIONAL AVIATION (CORSA)**

Airplane Operators attributed to Saudi Arabia								
Attribution Method	Identifier	Address	Province	City	Postal Code	Name of focal point	Tel of Focal Point	Email of focal point

II. Emissions Management Plan:

a. Airplane operators are required to submit to GACA the filled out EMP within three months of qualifying for CORSIA. The process to filling out the EMP is available in the GACAR 157- 01 Advisory Circular. See Appendix C for the format.

III. Emissions report:

a. The Emissions Report of an airplane operator is the document that must be submitted to GACA that details the CO₂ emissions of the previous year in the international flight of the Airplane Operators and contains the following information

- (1) Airplane operator identification and description of activities.
- (2) Underlying basic information of the Emissions Report.
- (3) Airplane fleet and fuel types.
- (4) Fuel Density
- (5) Reporting
- (6) Reporting – State Pairs
- (7) Reporting – Aerodrome Pairs
- (8) Data gaps

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

b. The format for the Emissions Report can be found below and on the GACA website.

CORSA
 EMISSIONS REPORT (ER)

CONTENTS

-
- 1 [Aeroplane operator identification and description of activities](#)
- 2 [Underlying basic information of the Emissions Report](#)
- 3 [Aeroplane fleet and fuel types](#)
- 4 [Fuel density](#)
- 5. [Reporting](#)
- 5.1 [Reporting - State pairs](#)
- 5.2 [Reporting - Aerodrome pairs](#)
- 6 [Data gaps](#)

Template Information

Template provided by:		
Version (publication date):		

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

1 AEROPLANE OPERATOR IDENTIFICATION AND DESCRIPTION OF ACTIVITIES

a) Name of aeroplane operator

Please enter the name of the aeroplane operator. This name should be the legal entity carrying out the aviation activities.

--

a1) Address of the aeroplane operator

Please enter the address of the aeroplane operator.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

a2) Contact person

Please enter the contact information of the person within the aeroplane operator who is responsible for the Emissions Report.

Title:	
First name:	
Surname:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

a3) Alternate contact person

Please enter the contact information of an additional person within the aeroplane operator who is responsible for the Emissions Report.

Title:	
First name:	
Surname:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

a4) Legal representative

Please enter a contact address of a representative who is legally responsible for the aeroplane operator for official correspondence.

Title:	
First name:	
Surname:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

b) Aircraft Identification of the aeroplane operator for international flights (Item 7 of the flight plan)

Select the options used for reporting flight attribution to the aeroplane operator.

ICAO Designator

Does Item 7 (aircraft identification) of the flight plan begin with an ICAO Designator according to Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services? If yes, please select "ICAO Designator" from the drop down list and complete b1).

Registration marks

Does Item 7 (aircraft identification) of the flight plan correspond to the nationality or common mark, and registration mark, as explicitly stated in an AOC (or equivalent)? If yes, please select "Registration marks" from the drop down list.

ICAO Designator and registration marks

Responsibility under the CORSIA

b1) ICAO Designator

Provide the ICAO Designator (or Designators) used for Air Traffic Control purposes, as listed in Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services, if the aeroplane operator has an ICAO Designator(s).

b2) Additional information on flight attribution

If during the monitoring period an additional attribution approach has been used to that identified in section b) and as explained in the EMP, please provide detailed information on the attribution process.

**EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
 INTERNATIONAL AVIATION (CORSA)**

c) Verification body

Contact information of the engaged accredited verification body.

Verification body:	
Title:	
First name of verifier:	
Surname of verifier:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

c1) Accreditation details

Please provide information regarding the national accreditation body.

Authorization based on:	
Body / Authority:	
Number:	
Country:	

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
INTERNATIONAL AVIATION (CORSA)

**2 UNDERLYING BASIC INFORMATION OF THE EMISSIONS
REPORT**

a) Reporting year

Please provide the reporting year.

b) End of reporting period

Usually the last day of the reporting year, as long as the operator has not ceased flight operations during the reporting year. Use the format ~~yyyy~~-mm-dd.

c) Date of issue

Date on which the Emissions Report was compiled. Use the format ~~yyyy~~-mm-dd.

d) Version

In case of multiple submissions, please enter the Emissions Report version number.

e) Current Emissions Monitoring Plan

Please enter the version number of the approved Emissions Monitoring Plan on which this Emissions Report is based.

e1) Approval of the current Emissions Monitoring Plan

Please enter the date of the approval of the Emissions Monitoring Plan. Use the format ~~yyyy~~-mm-dd.

e2) Emissions Monitoring Plan is valid from

Please enter the date of validity of the current Emissions Monitoring Plan. Use the format ~~yyyy~~-mm-dd.

e3) Last update of the Emissions Monitoring Plan

Please enter the date of the Emissions Monitoring Plan on which basis this report was created. Use the format ~~yyyy~~-mm-dd.

|

e4) Was more than one approved Emissions Monitoring Plan version used during the reporting year?

Please choose "yes" if the Emissions Report is based on more than one Emissions Monitoring Plan.

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

e4.1) Explanation

Please explain in detail the implications of the use of several Emissions Monitoring Plans during the reporting year.

e5) Previous Emissions Monitoring Plan (if applicable)

Please list the previous Emissions Monitoring Plan version with version number and date of approval (if applicable).

f) Fuel Use Monitoring Method and / or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)

Please indicate whether the aeroplane operator used the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) and whether the tool was used for all international flights or only for international flights not subject to offsetting requirements.

g) Fuel Allocation with Block Hour

Please indicate whether the aeroplane operator used the Fuel Use Monitoring Method "Fuel Allocation with Block Hour" during the reporting year.

g1) Underlying aeroplane fuel burn

Please complete the table below with the average fuel burn ratio (AFBR) for each aeroplane type as specified in Doc 8643 — Aircraft Type Designators. AFBR will be provided in tons per hour (rounded to at least three decimal places) for the current reporting year.

Additional information about Doc 8643 — Aircraft Type Designators can be found at: <http://www.icao.int/publications/DOC8643/Pages/Search.aspx>

No.	ICAO aircraft type designator	Specific fuel burn (in tons per hour)
1		
2		
3		
4		
5		
6		

3 AEROPLANE FLEET AND FUEL TYPES

a) Registration of all aeroplanes operated in the reporting year

Please list all aeroplanes with an MTOM greater than 5 700 kg (12 566 lbs.) operated on international flights, as defined in Annex 16, Volume IV, Part II, Chapter 1, 1.1.2, and Chapter 2, 2.1, during the reporting period. If necessary, please attach a separate list.

Please enter the ICAO aircraft type designator, as specified in Doc 8643 — Aircraft Type Designators, the registration marks and state whether the aeroplane is owned or leased. Please mark with an "X" applicable fuel(s) type(s) for each ICAO aircraft type designator⁷.

Additional information about Doc 8643 — Aircraft Type Designators can be found at: <http://www.icao.int/publications/DOC8643/Pages/Search.aspx>

⁷ For the purposes of this template, the fuel total could include the sum of equivalent fuels.

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

No.	ICAO aircraft type designators	Registration marks	Owned or leased	Fuel used ^(*)			
				Jet-A	Jet-A1	Jet-B	AvGas
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

4 FUEL DENSITY

a) Fuel density

Please specify whether standard and / or actual density was used to determine the fuel uplift in the reporting year.

a1) Consistency

Please confirm that the application of density data for CORSIA purposes is fully identical to the actual procedures used for operational and safety reasons.

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INTERNATIONAL AVIATION (CORSA)

5 REPORTING

a) Aggregation level of reported data

Please select whether the aeroplane operator reports on a State pair or at an aerodrome pair level as advised by the State. If State pair level is chosen, please continue with "5.1 Reporting - State pairs". If aerodrome pair level is selected, please continue with "5.2 Reporting - Aerodrome pairs".

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5.2 REPORTING - AERODROME PAIRS

Explanation: Please complete the list underneath. All aerodrome pairs that were operated during the reporting year have to be reported.

Note I: Please report both directions between aerodrome pairs if applicable (A-B and B-A).

Note II: If you used different type of fuels on the same aerodrome pair with different fuel conversion factors, you need to create an identical aerodrome pair and report this portion of fuel separately. Please note, emissions from CORSIA eligible fuels are calculated with the fuel conversion factor(s) from corresponding aviation fuels.

Note III: Please also complete the CORSIA eligible fuels supplementary information to the Emissions Report, if CORSIA eligible fuels were used during the reporting period.

a) Summary of reported international flights and emissions

Total CO ₂ emissions from international flights (in tons):	
Total CO ₂ emissions from flights subject to offsetting requirements (in tons):	
Total number of international flights during reporting period:	
Total number of international flights subject to offsetting requirements:	
Total emissions reductions claimed from the use of CORSIA eligible fuels (in tons):	

b) Summary of fuel quantities⁽¹⁾ (in tons):

⁽¹⁾ For the purposes of this template, the fuel total could include the sum of equivalent fuels.

Jet-A	
Jet-A1	
Jet-B	
AvGas	

b1) CORSIA eligible fuels claimed

If claiming emission reductions from the use of CORSIA eligible fuels, please complete the table below. Supplementary information about the claim is also required, and can be reported using the CORSIA eligible fuel supplementary information template.

⁽¹⁾ For the purposes of this template, the fuel total could include the sum of equivalent fuels.

Fuel type			Total mass of the neat CORSIA eligible fuel (in tons)	Approved Life Cycle Emissions values	Emission reductions claimed
Fuel type (e.g. Jet-A) ⁽¹⁾	Feedstock	Conversion process			
Total emission reductions from the use of CORSIA eligible fuel(s) claimed					

c) Table of all aerodrome pairs

Please list all aerodrome pairs on which international flights were performed and enter the number of flights and the amount of CO₂ emissions.

⁽¹⁾ For the purposes of this template, the fuel total could include the sum of equivalent fuels.

□

**EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
 INTERNATIONAL AVIATION (CORSA)**

Departure		Arrival		CO2 emissions estimated with CERT?	Total No. of flights	Fuel type (*)	Total amount of fuel used (in tons)	Fuel conversion factors	CO2 emissions (in tons)	Subject to offsetting requirements ?
ICAO airport code	State	ICAO airport code	State							

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

6 DATA GAPS

Explanation: "Data gaps" occur when an aeroplane operator is missing data which is relevant for the determination of its fuel use for one or more international flights in accordance with Annex 16, Volume IV, Part II, Chapter 2, 2.2.1.1.

a) Did any data gaps occur during the reporting year?

b) Is the threshold of 5 per cent for data gaps exceeded?

In 2019 and 2020, 5 per cent refers to international flights, as defined in Annex 16, Volume IV, Part II, Chapter 1, 1.1.2, and Chapter 2, 2.1.

From 2021 onwards, 5 per cent refers to international flights subject to offsetting requirements, as defined in Annex 16, Volume IV, Part II, Chapter 1, 1.1.2, and Chapter 3, 3.1.

The aeroplane operator using a Fuel Use Monitoring Method must fill data gaps using the ICAO CORSIA CERT, provided that the data gaps during a compliance period do not exceed the thresholds described above.

Estimated emissions should then appear in spreadsheet 5.1 Reporting - State Pairs as separate State pairs (if reporting is done at State pair level) or in spreadsheet 5.2 Reporting - Aerodrome Pairs as separate aerodrome pairs (if reporting is done at aerodrome pair level).

b1) Per cent of data gaps

Please enter per cent of data gaps (according to criteria defined in Part II, Chapter 2, 2.5.1 and rounded to the nearest 0.1 per cent)

b2) List of data gaps if the 5 per cent threshold has been exceeded in the reporting year

Please complete the list underneath if the threshold has been exceeded.

No.	Reference (Describe the data gap, either by referencing the aeroplane, aerodrome, flight number, etc. for which the data gap occurred and/or the start and end date of the period where the data gap occurred.)	Cause (Please describe the cause why the data gap occurred.)	Type (Describe the type of data gap, such as "density measurement not available", "fuel uplift not available", etc.)	Replacement method (Describe the method of determining alternative data, such as referencing the procedure in your Emissions Monitoring Plan, "by ... Tool", etc.)	CO ₂ emissions (in tons) (Provide the amount of CO ₂ emissions which are effected by the data gap).	Remarks
1						
2						

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
 INTERNATIONAL AVIATION (CORSA)

**IV. Template of CORSIA eligible fuels - supplementary information to the emissions
 report (from aeroplane operator to state)**

- a. This section provides a template version of the reporting requirements as described in Annex 16,
 Volume IV, Appendix 5, Table A5-2.

CORSIA

**CORSIA ELIGIBLE FUELS
 SUPPLEMENTARY INFORMATION***

(*supplementary information to the Emissions Report from
 aeroplane operator to State)

CONTENTS

- [Template information](#)
- [Aeroplane operator identification and reporting information](#)
- [CORSIA eligible fuel claim form](#)
- [Summary of CORSIA eligible fuels information](#)

Template Information

Template provided by:		
Version (publication date):		

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR
INTERNATIONAL AVIATION (CORSA)

**AEROPLANE OPERATOR IDENTIFICATION AND REPORTING
INFORMATION**

a) Name of aeroplane operator

Please enter the name of the aeroplane operator. This name should be the legal entity carrying out the aviation activities.

a1) Address of the aeroplane operator

Please enter the address of the aeroplane operator.

Address:	<input type="text"/>
City:	<input type="text"/>
State/Province/Region:	<input type="text"/>
Postcode/ZIP:	<input type="text"/>
Country:	<input type="text"/>

b) Reporting year

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

CORSA ELIGIBLE FUEL CLAIM FORM

Note: for each claim of emissions reductions from the use of CORSA eligible fuels, please replicate this and fill separately.

Fuel Claim #:

a) Purchase date

Please enter the date when the neat CORSA eligible fuel was purchased. Use the format yyyy-mm-dd.

b) Identification of the producer of the CORSA eligible fuel

b1) Name of producer of the neat CORSA eligible fuel

Please enter the name of the fuel producer.

b2) Address of the producer of the neat CORSA eligible fuel

Please enter the address of the producer of the neat CORSA eligible fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

c) Fuel production

c1) Date of production of the neat CORSA eligible fuel

Please enter the date of production of the neat CORSA eligible fuel. Use the format yyyy-mm-dd.

c2) Location of the production of the neat CORSA eligible fuel

Please enter the address of the production of the neat CORSA eligible fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

c3) Batch identification number:

c4) Mass of each batch of neat CORSA eligible fuel produced

EBOOK VOLUME 17. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

Please enter the total mass of each batch of neat CORSIA eligible fuel produced (in tons).

d) Fuel type

d1) Type of fuel

Please enter the type of fuel (i.e., Jet-A, Jet-A1, Jet-B, AvGas) for the purpose of computation of Life Cycle Emissions factors.

d2) Feedstock type

Please enter the information on the feedstock used to create the neat CORSIA eligible fuel.

d3) Conversion process

Please enter the conversion process (i.e., a type of technology used to convert a feedstock into neat CORSIA eligible fuel).

e) Portion of batch purchased (if needed)

e1) Percentage

If less than an entire batch of neat CORSIA eligible fuel is purchased, please enter the proportion of neat CORSIA eligible fuel batch purchased (in percentage terms).

e2) Mass of batch purchased

Please enter the mass of CORSIA eligible fuel batch purchased (in tons).

f) Mass of neat CORSIA eligible fuel

Please enter the total mass of all batches of neat CORSIA eligible fuel included in the claim (in tons).

g) Sustainability documentation

Please provide evidence that the fuel satisfies the CORSIA Sustainability Criteria i.e., reference of attached valid certification document.

h) Life Cycle Emissions Values of the CORSIA eligible fuel

h1) Default or Actual Life Cycle Emissions value (L_{SE})

Please enter the Life Cycle Emissions value (in gCO₂e/MJ).

h2) Default or Actual Core Life Cycle Assessment (LCA) value

Please enter the Core Life Cycle Assessment (LCA) value (in gCO₂e/MJ).

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h3) Default Induced Land Use Change (ILUC) value

Please enter the Induced Land Use Change (ILUC) value (in gCO₂e/MJ).

i) Intermediate purchaser 1 (if needed)

If the aeroplane operator claiming emissions reductions from the use of CORSIA eligible fuels is not the original purchaser of the fuel from the producer (e.g., the aeroplane operator purchased fuel from a broker or a distributor), include the identity and contact information of these purchaser(s).

i1) Name of the intermediate purchaser 1.

Please enter the name of the intermediate purchaser 1.

i2) Address of the intermediate purchaser 1.

Please enter the address of the intermediate purchaser 1.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

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j) Intermediate purchaser 2 (if needed)

Please include the identity and contact information of the intermediate purchaser 2.

j1) Name of the intermediate purchaser 2.

Please enter the name of the intermediate purchaser 2.

j2) Address of the intermediate purchaser 2.

Please enter the address of the intermediate purchaser 2.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

k) CORSIA eligible fuel shipper

k1) Name of the CORSIA eligible fuel shipper.

Please enter the name of the party responsible for shipping of the neat CORSIA eligible fuel to the fuel blender.

k2) Address of the CORSIA eligible fuel shipper.

Please enter the address of the party responsible for shipping of the neat CORSIA eligible fuel to the fuel blender.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

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l) Fuel blender

l1) Name of the fuel blender

Please enter the name of the party responsible for blending neat CORSIA eligible fuel with aviation fuel.

l2) Address of the fuel blender

Please enter the address of the party responsible for blending neat CORSIA eligible fuel with aviation fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

m) Location of blending

Please enter the location where the neat CORSIA eligible fuel is blended with aviation fuel.

Address:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

n) Neat CORSIA eligible fuel received

n1) Date the neat CORSIA eligible fuel was received

*Please enter the date the neat CORSIA eligible fuel was received by blender. Use the format **yyyy-mm-dd**.*

n2) Mass of neat CORSIA eligible fuel received

Please enter the mass of neat CORSIA eligible fuel received (in tons).

o) Blend ratio of neat CORSIA eligible fuel and aviation fuel

Please enter the blend ratio of neat CORSIA eligible fuel and aviation fuel.

p) Documentation demonstrating blending

Please provide documentation demonstrating that the batch or batches of CORSIA eligible fuel were blended into aviation fuel (e.g., the subsequent Certificate of Analysis of the blended fuel).

q) Mass of neat CORSIA eligible fuel claimed

Please enter the mass of neat CORSIA eligible fuel claimed (in tons).

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SUMMARY OF CORSA ELIGIBLE FUELS INFORMATION

a) Summary of CORSA eligible fuels (by fuel claim #)

Please provide a summary of the CORSA eligible fuels claimed for the reporting year.

Fuel claim #	Fuel type			Total mass of neat CORSA eligible fuel claimed (in tons)	Life cycle emissions values of the CORSA eligible fuel	Emissions reduction from CORSA eligible fuels claimed (in tons)
	Type of fuel	Feedstock type	Conversion process			
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

b) Summary of information of CORSA eligible fuels claimed

b1) Total of emissions reduction from CORSA eligible fuels claimed (in tons)

Please enter the sum of the values included in column "Emissions reduction from CORSA eligible fuels claimed (in tons)" of the table above.

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APPENDIX E: VERIFICATION

I. Verification by the verification body

a. Given the general provisions in the GACAR 157 relevant to ISO GHG standards, this section provides additional guidance on the GACAR 157-specific verification characteristics which are not already mentioned in the aforementioned documents.

II. Pre-contract stage

a. It is recommended that airplane operator and verification body agree on the contractual matters of the verification engagement at the latest by July of the calendar year for which the verification will be carried out. It is advised that the verification body perform a preliminary strategic analysis on the basis of publicly available data (such as web page of the airplane operator) to assess the potential complexity and length of the verification engagement. The verification body may confirm with the airplane operator before offering a contract whether the airplane operator makes use of the voluntary pre-verification approach as this may result in reduced costs for the verification.

b. For each verification engagement, the verification body must ensure that a competent and impartial verification team and independent reviewer are appointed prior to signing a legally enforceable agreement with the airplane operator. Depending on the outcomes of the strategic and risk analyses, however, team composition may require adjustment to ensure its continued competence. The specific competencies required for a verification team, including knowledge requirements, technical expertise, and data and information auditing expertise are provided in:

(1) ISO 14065:2013 entitled “Greenhouse gases — Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition”;

(2) ISO 14066:2011 entitled “Greenhouse gases — Competence requirements for greenhouse gas validation team and verification teams”; and

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c. Verification bodies must ensure that, at a minimum, the verification team include a team leader, as defined in ISO14066:2011, who leads the engagement planning and management of the verification team. While it is possible that a single individual, or team leader, may fulfil all the competence requirements for a verification team, ISO 14065 requires that someone not directly involved with the verification activities confirm that all verification activities have been completed and determines whether the Emissions Report is free from material discrepancies. The internal reviewer is typically appointed at the same time as the verification team members, and must have competencies equivalent to a team leader. All verification team members must be identified in the Verification Report.

d. To perform all verification activities sufficiently, the verification body requires access to all relevant documents including the airplane operator's data and data systems. The identification of all relevant data sources should be done in advance. Access should also be granted to premises and staff of the airplane operator (e.g. for interviews), if this is needed to conduct the verification in an appropriate manner.

III. Strategic analysis

a. It is recommended that the verification body conduct the strategic analysis^[1] by September of the ongoing reporting year. In addition to the program-neutral content of the strategic analysis, the GACAR 157-specific parts should at least include the following items:

- (1) Operating environment of the airplane operator (e.g. type of flights, number of flights and airplane, organizational structure, subsidiaries, key commercial data such as growing or shrinking business, web page information, AOC, technical details regarding internal and external database accesses);
- (2) Emissions Monitoring Plan (e.g. approved or not, data flow activities, specific conditions set out by GACA, sufficient descriptions and explanations contained, meets requirements of GACAR 157, potential modifications after approval);
- (3) Previous versions of Emissions Report and Verification Report;
- (4) Relevant communication between airplane operator and GACA; and
- (5) Share of reported emissions with an actual offsetting requirement.

b. If the verification body has not achieved a sufficient level of understanding to assess the scope and complexity of the verification, it will not be possible to perform a risk analysis, determine if a modification

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to the verification team is required or assess whether the contractually agreed time allocation for this specific verification engagement is indeed sufficient.

IV. Risk analysis

a. It is recommended that the verification body conduct the analysis of risks^[2] by September of the ongoing reporting year directly after the strategic analysis. In addition to the program-neutral content of the risk analysis, the GACAR 157-specific parts should at least include the following items:

- (1) Complexity of the Emissions Monitoring Plan (number of airplane types, different monitoring methods, use of simplified MRV);
- (2) Maturity of the internal control activities;
- (3) Maturity of the data flow activities;
- (4) Assessment whether GACAR 157 data and information is part of a certified management system;
- (5) Internal audit reports;
- (6) Number of data gaps;
- (7) Multiple locations for data gathering and processing;
- (8) Centralized vs. decentralized responsibilities for GACAR 157;
- (9) Use of CORSIA eligible fuels; and
- (10) Voluntary pre-verification documentation.

b. verification bodies are encouraged to check the results and documentation of the voluntary pre-verification in detail. Depending on the documentation, results of the pre-verification might significantly reduce the verification risk. On the basis of the risk analysis, verification bodies should identify and quantify inherent and control risks. As with other GHG schemes, the risk analysis is subject to revision should the verification reveal that the risk is actually much higher or lower than originally assessed. This has an influence on the verification plan as well.

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V. Verification plan

a. It is recommended that the verification body draft the verification plan by September of the ongoing reporting year directly after the risk analysis. The following elements should be covered:

(1) Verification program (including name of airplane operator, verification objective, verification scope, verification language, arrangements and responsibilities within the verification team, site visit arrangements, activities performed on- and off-site, document list);

(2) Test plan for control activities (scope and methods of testing, including IT controls, quality assurance in outsourced processes, procedures of the Emissions Monitoring Plan); and

(3) Data sampling plan (scope and methods, including specific data points such as ACARS triggers, flight logs, fuel uplift statements).

b. Where additional risks are identified or new information is discovered during the actual verification that changes the original assessment of a risk, the associated risk analysis and verification plan must be updated.

c. Site visits are an essential part of the verification activities under GACAR 157, whereas the term ‘site’ refers to the place where the airplane operator performs the main activities of data processing to calculate the final figures of the Emissions Report (in most cases the headquarters of the airplane operator). Site visits are recommended for verification bodies verifying an Emissions Report of an airplane operator using Fuel Use Monitoring Methods as described in Appendix A. This does also apply to verification bodies verifying an Emissions Report of an airplane operator eligible to use the ICAO CORSIA CERT that has chosen to apply Fuel Use Monitoring Methods as described in Appendix B. To a large extent the risk analysis, but also evidence obtained during the verification itself, determine the scope and also the number of site visits necessary for a verification body to conclude on the Emissions Report. During the visit the verification body is, for instance, able to obtain physical evidence of the systems in place, can interview staff of the airplane operator, and check the practical application of control procedures.

d. Also, for verification bodies providing verification services for an airplane operator using the ICAO CORSIA CERT, site visits are an essential means through which the verification team can collect sufficient and appropriate evidence to confirm whether the Emissions Report is free from material misstatements and material non-compliances. Nevertheless, especially after the initial verification of an airplane operator using the ICAO CORSIA CERT, the verification body might discover in its risk analysis a very low verification risk as the processes and internal control procedures of the airplane operator have proven to be effective and reliable. In such cases the verification body may choose to substitute a site visit with an

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alternative remote verification technique like video-conferencing and direct access to the databases of the airplane operator. As with physical site visits, it is very important to not base verification activities on technology which does not allow instant communication (e.g., email). To reduce costs for the airplane operator, responsible staff might also visit the verification body in its own offices and provide instant data access by carrying company notebooks with them and provide immediate answers to specific questions by initiating (video) calls to responsible staff in the headquarter. If the verification body decides to replace a site visit(s) with other means, this has to be clearly indicated in the Verification Report. This includes the reasoning for the decision on the basis of the risk analysis as well as a detailed explanation of the technical systems used. The verification body should coordinate with GACA before replacing the site visit with an alternative approach.

VI. Verification

a. To obtain sufficient insight but also to avoid any time pressure between the end of the reporting year and the submission of a verified Emissions Report, it is recommended that the verification body perform a preliminary verification during the actual reporting year as well. This can prove especially useful if the verification body was not able to build its verification plan on the basis of its own experiences obtained from previous audits of the same airplane operator. For a preliminary verification, at least nine months of flight and fuel consumption data has to be available and processed already. Depending on the individual risk assessment and the confidence obtained in the procedures of the airplane operator, a combined approach of a remote and on-site audit can be possible. Results of the preliminary verification inform the actual verification. Consequently, total time spent for a preliminary and a (shortened) actual verification might not necessarily be longer than combining all verification tasks in a single verification.

b. As in other GHG schemes, it is expected that the verification body will use standard auditing techniques (such as interviews, analytical data testing approaches, and document reviews) when implementing the verification plan.

c. The verification body assesses the material impact the identified misstatements and non-conformities are likely to have on the reported data.

VII. Data Gaps

a. Data gaps occur when an airplane operator is missing data relevant for the determination of its fuel use for one or more international flights in accordance with GACAR part 157.29(a)(1). Gaps in emissions-related data can occur due to various reasons, including irregular operations, data feed issues or critical system failures. Procedures to prevent data gaps are to be detailed in the Emissions Monitoring Plan of the

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airplane operator in accordance with Appendix B. When data gaps are identified by the verification body, it may be unable to obtain sufficient evidence to determine compliance with the requirements, which for severe data gaps, could result in the verification body concluding that the Emissions Report is unsatisfactory. A data gap could also be identified by GACA in its review of the verified Emissions Report.

VIII. Addressing misstatements and non-conformities

a. The airplane operator will correct all misstatements and non-conformities discovered during the verification. If it is not possible to correct the corresponding values, or if the verification body has not achieved sufficient confidence in the airplane operator's Emissions Report, the verification body has to follow the instructions as described in Section 29.

IX. Verification Report

a. The verification body will draft a Verification Report after the completion of verification activities. The Verification Report contains a concluding verification statement.

X. Independent review

a. Before submission of the Emissions Report to GACA, all documentation of the verification engagement as well as the Verification Report itself have to be reviewed by an independent reviewer. The independent reviewer will confirm that all verification activities have been completed by the verification team and that the evidence collected is appropriate and sufficient and leads to the conclusions formed by the team.

b. This additional final quality check is essential for the verification body and the airplane operator. All identified errors by the independent reviewer have to be corrected. Due to the large amount of data involved in the GACAR 157 verification process, the independent reviewer should focus on assessing whether the verification team was able to gather sufficient and appropriate evidence to support the verification statement included in the Verification Report. This includes the documented sample size and the documented analytical procedures applied to the datasets of the airplane operator.

c. As in other GHG schemes, the independent reviewer will not be part of the verification team.

XI. Authorization to forward Emissions Report

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a. The verification body will forward the Verification Report and the Emissions Report to GACA. To avoid the unintended submission of the Verification Report and the Emissions Report by the verification body, the verification body will forward these reports upon authorization by the airplane operator. Specifics regarding this provision should be contained in the contract between the verification body and the airplane operator.

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XII. Submission of Verification Report and Emissions Report

a. As well as the verification body sending the Verification Report together with the Emissions Report to GACA, the airplane operator will also provide GACA with a copy of the Verification Report and the Emissions Report. GACA will review the documents and may contact the airplane operator and the verification body to receive further explanations if required.

3. Conducting the verification activities

a. It is anticipated that a typical verification will include:

- (1) The collection of evidence to support the Emissions Report through interviews and observation (site visits or remote verification techniques);
- (2) Review of the greenhouse gas information system and its controls; and
- (3) Comparison of the implemented data flow, procedures, control activities and Fuel Use Monitoring Method against the requirements set out in GACAR 157 and the airplane operator's Emissions Monitoring Plan. Before initiating the verification activities, however, it is important that the verification team understand the current status of the airplane operator's Emissions Monitoring Plan, and has built up a sufficient understanding of the airplane operator's data flow, procedures and control activities, as detailed in the Emissions Monitoring Plan. These two important considerations are described in more detail below.

4. Status of the Emissions Monitoring Plan

a. The verification body must take the Emissions Monitoring Plan as the starting point to conduct verification activities. This includes an assessment whether the approved Emissions Monitoring Plan is in accordance with GACAR 157 and whether procedures described in the Emissions Monitoring Plan have been sufficiently implemented by the airplane operator (e.g. data flow and control activities). The verification body verifies the Emissions Report against the Emissions Monitoring Plan and assesses whether the Emissions Report is free from material misstatements and material non-conformities. If the airplane operator has based its monitoring activities on a not-yet-approved Emissions Monitoring Plan or an updated but not yet approved Emissions Monitoring Plan, the verification body will pay particular

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attention whether the Emissions Monitoring Plan is in accordance with GACAR §157.23 .

b. This has to be considered a very rare situation. However, GACA might not always be in the position to approve an update of an Emissions Monitoring Plan on short notice in situations where the airplane operator discovers the need for a change to clarify a description between the Emissions Monitoring Plan and the actually implemented process shortly before the verification. In such situations, the verification body has to check whether the changes in the Emissions Monitoring Plan are likely to be acceptable under GACAR 157 to avoid a verification on the basis of an Emissions Monitoring Plan that is later not considered to be in conformity with the GACAR 157 MRV requirements. The airplane operator should also be advised by the verification body to contact GACA to clarify the situation. If an approved (or not yet approved) Emissions Monitoring Plan fails to provide sufficient scope or certainty to design the verification approach, the verification body might conclude that the Emissions Report cannot be verified. It is recommended that the verification body advise the airplane operator to immediately contact GACA in such cases.

5.Understanding data flow

a. Data flow activities undertaken by the airplane operator should be defined in the Emissions Monitoring Plan along with primary data sources and the procedures controlling these data flows. It is essential that the verification body verify the described data flows of the Emissions Monitoring Plan. The starting point of this verification activity is always the (external and internal) primary data source such as the fuel supplier invoices, fuel uplift statements, flight or technical logs, invoices from air navigation service providers, or ACARS messages. See Table E-1 for additional examples of aviation data sources and related documentation.

Table E-1: Aviation reference data sources and documentation

<i>Examples</i>	<i>Categorization</i>	<i>Technical Explanation</i>
Airline software systems	Secondary internal data	-Operational data containing details on flights, loads routing etc. -Includes already processed data -Potentially internal quality assurance against primary data

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Flight / technical logs and typically included data	Primary internal data	<ul style="list-style-type: none"> -Operational data containing details on flights, loads routing etc. -High level of reliability as safety relevant -Flight logs can be completed manually (handwritten automatically)
ATC flight plan and OFP	Primary internal data	<ul style="list-style-type: none"> -Operational data needed to operate a flight; contains airplane identification, flight route details -Does not provide evidence on fuel consumption or whether the flight has indeed taken place or not
Air traffic control data and invoices	Primary external data	<ul style="list-style-type: none"> -Operational data containing flight details, airplane, routing including speed and altitude - Data generated by third party (ATC); high reliability with sufficient evidence whether a flight took place or not
Fuel invoices	Primary external data	<ul style="list-style-type: none"> -Invoice from the fuel supplier (per flight) -Cross check with accounting data possible - Can be used for cross-checking fuel uplift e.g. with data contained in flight/ technical logs and airline software systems
Fuel slips	Primary external data	<ul style="list-style-type: none"> -Transaction document (per flight) -Can be used for cross-checking fuel uplift and (sometimes) density e.g. with data contained in flight/ technical logs and airline software system
Maintenance /downtime records	Primary and secondary internal data	<ul style="list-style-type: none"> -Documentation/information in diverse forms, which document the block-off hours of each specific airplane due to maintenance or other down-time reasons - Maintenance reports might be necessary to track effects like emptying of tanks or longer periods of inactivity of a specific airplane due to technical reasons

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Fuel density records	Primary external data	<ul style="list-style-type: none"> -Usually supplied by external source (e.g. into plane agent, tank farm) -Density sometimes also included in fuel slip -Assessment of actual measuring method important
Blend tickets		<ul style="list-style-type: none"> -Information concerning the blending of CORSIA eligible fuel located within the fuel's associated Certificate of Analysis or Refinery Certificate of Quality (RCQ)
Sustainability documentation		<ul style="list-style-type: none"> -Information concerning CORSIA eligible fuels.
Reports generated for other purposes, e.g. sustainability report	Secondary internal data	<ul style="list-style-type: none"> -Reports might have undergone data quality checks a verification
Wet lease agreements	Primary internal data	<ul style="list-style-type: none"> -Including specific CORSIA related information such provisions on forwarding of fuel and emissions calculations to the lessor
<i>Examples</i>	<i>Categorization</i>	<i>Technical Explanation</i>
Air operator certificate (AOC)	Primary external data	<ul style="list-style-type: none"> -A certificate authorizing an operator to carry out specified commercial air transport operations (IC Annex 6) -Usually includes fleet information
Flight plans	Primary internal data	<ul style="list-style-type: none"> -Needed to operate a flight; contains i.e., airplane identification, route details - Planning document only -Does not provide evidence on fuel consumption or whether the flight has indeed taken place or not

b. The verification body must build up a clear understanding of the actual relation of these primary data sources to the data flow, the information system and the data and information handling procedures contained in the Emissions Monitoring Plan (including any intermediate steps such as processing of the

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data, rounding of data, and interfaces between different IT systems). To assess the inherent risk, the verification body should assess whether the responsible staff of the airplane operator demonstrates a sufficient level of knowledge and experience with the specific data flow activities.

c. After a sufficient understanding of the data flow has been achieved, specific emphasis should be given to assessing the procedures controlling the data flows to ensure their actual implementation and their effectiveness. This includes, but is not limited to, assessing procedures documented in the Emissions Monitoring Plan related to attributing flights, tracking the fleet and fuel consumption, tracking flights and their status within CORSIA, and handling data gaps, to name but a few.

6. Assessing the GHG information systems and controls

a. The procedures for controlling data flows are defined by the airplane operator and included in the Emissions Monitoring Plan. The objective is to ensure the quality of the data and to avoid bias in data processing that can lead to misstatements and non-conformities. In assessing controls, the verification body will compare the implemented control activities against the requirements set out in GACAR 157 and the airplane operator's Emissions Monitoring Plan to ensure these:

- (1) Are present and properly documented and retained;
- (2) Reflect the information listed in the summary of the procedures in the approved Emissions Monitoring Plan;
- (3) Have been correctly implemented and are up to date;
- (4) Are applied throughout the year; and
- (5) Are effective to mitigate the inherent and control risks.

b. To check an appropriate implementation of control activities as described in the Emissions Monitoring Plan, the verification body should develop a list of practical examples while accessing primary data sources. On the basis of these examples, interviews with responsible staff of the airplane operator can be conducted and/or the behavior of automatic or manual control activities can be observed. Moreover, the inspection of internal documentation (e.g. internal audits such as the pre-verification approach or procedural instructions) might support the verification body to assess the reliability and robustness of control activities.

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c. Within GACAR 157, it is recommended to especially check the following control activities (including frequency, effectiveness with regard to their implementation, whether they are carried out manually or automatically, different responsibilities for data flow/processes and control activities, and sufficient documentation):

- (1) Quality assurance and procedures for updating State pairs with and without offsetting requirements;
- (2) Data filters to identify abnormal or obviously incorrect primary data such as unreasonably low average fuel burns, technically not feasible fuel uplifts, or questionably long downtimes;
- (3) Control activities for avoiding the use of data gap procedures despite the fact that alternative primary data may be available;
- (4) Existing control activities to ensure the consistency and completeness of the flight plan per airplane registration (e.g. following a flight from aerodrome A to aerodrome B, and checking that the following flight indeed departs from aerodrome B and not aerodrome C), including the use of invoices from air navigation service providers; and
- (5) Effectiveness of control activities in place for any outsourced processes.

d. After analyzing the effectiveness of the control activities and together with the inherent risks related to the data flow activities as described in (a), the verification body has to assess the overall risk for misstatements and non-compliances in the airplane operator's Emissions Report. New observations have to be reflected in the risk analysis and in the verification plan.

I. Testing IT controls

a. Data on aviation emissions will, most of the time, be collected and analyzed by means of the airplane operator's IT system. Against this background, IT systems play an important role in complying with GACAR 157 requirements. Therefore, assessing IT related risk is an essential task for the verification body. IT systems consist of hardware, software, IT environment/organization, IT based processes, IT applications as well as IT infrastructure. IT system related risks can be subdivided as follows:

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- (1) Risks associated with IT infrastructure refer to the vulnerability to interference and breaches of information security. This may lead to an increased risk for the collation, transfer, processing, analysis, aggregation, storage and data reporting;
- (2) Risks concerning IT applications relate to a malfunctioning of these applications, a lack of backup procedures, a lack of input controls, process controls as well as output controls, and possible software coding or scripting errors;
- (3) Risks related to IT processes include a lack of data-flow transparency (black boxes), a malfunctioning of the interface(s), the general risk that control measures only address part of the process, and IT system failures. The latter risk may lead to a failure in data collecting from automated monitoring equipment during the time of the IT system break-down; and
- (4) Human errors may, of course, also lead to risks associated with the airplane operator's IT system. For instance, deleting current emission data by mistake.

b. It is important that the verification body have a good understanding of the potential risks associated with the airplane operator's IT system for complying with GACAR 157 requirements. Verification bodies also need to consider whether the IT system and processes are being managed under an effective IT Management System such as ISO/IEC 20000 (ISO /IEC 20000-1:2011 "Information Technology -- Service Management -- Part 1: Specification"; and ISO /IEC 20000-2:2012 "Information Technology -- Service Management -- Part 2 -- Code of Practice"). Also, the appropriate use of calculation formulae and access controls, the possibility of recovering data, continuity planning and security with respect to IT will have to be taken into account by the verification body.

c. The verification body checks the control measures implemented in the IT system and electronic interfaces to provide for:

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- (1) Timeliness, availability and reliability of data;
- (2) The correctness and accuracy of data, e.g. to avoid, among other things, double counting;
- (3) The completeness of data;
- (4) The continuity of the data to avoid data being lost and to ensure traceability of data;
- (5) Access rights: i.e. who has the right to access and modify data; and
- (6) The integrity of data: i.e. to ensure that data are not modified by unauthorized persons.

d. These measures could include a manual check on whether the IT system is functioning and whether the aforementioned points are met. It will include control activities and maintenance tools built into the IT system such as access controls, backups, recovery, continuity planning, change management and security. The type of testing carried out by the verification body depends on whether these control measures are manual or electronic.

II. Testing of outsourced processes by the verification body

a. Even though many parts of the data flow can be outsourced to third parties in principle, the airplane operator remains responsible for the data resulting in the Emissions Report. Activities such as flight planning are in fact outsourced by many commercial airplane operators. Therefore, it is important that the airplane operator controls the quality of these activities. In this respect, the verification body has to investigate two questions: Firstly, to what extent has a certain data flow activity been outsourced by the airplane operator? Secondly, how does the airplane operator control that its service providers carry out their activities in accordance with the necessary quality? The latter refers to conducting tests; for example, assessing the procedures for procurement, internal audit (including the frequency of audits), carrying out plausibility checks on the data, checking service level agreements with fuel suppliers, instrument engineers, and checking how an airplane operator ensures that its service providers carry out their activities according to the service level agreement.

7. Assessing CO₂ emissions data and information

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a. The emissions data and information are usually assessed at the same time as the information system and controls, in accordance with the verification and sampling plans. If any issues that have the potential to lead to an error, omission or misrepresentation are identified during the collection of evidence, the sampling and testing activities can be amended to gather more evidence. For example, if one data sample proves to have discrepancies, the sample number may increase for the data set.

b. Examples of things to consider when assessing the data and information include:

- (1) Completeness, consistency, accuracy, transparency, relevance and conservativeness of the greenhouse gas information, including raw data;
- (2) Application of the GACAR 157 emissions monitoring and reporting requirements by the airplane operator in accordance with the Emissions Monitoring Plan;
- (3) Maintenance and calibration program for measurement and monitoring equipment

c. The verification body should be aware that verifications within GACAR 157 involve large amounts of data. Depending on the monitoring method (and other factors) more than 10 data points per flight can be needed to calculate CO₂ emissions and attribute these emissions correctly within GACAR 157. Consequently, actual data verification by using analytical procedures should always be the dominating part of the entire verification engagement. This also includes the check between primary data (e.g. fuel invoice or uplift statement) against corresponding data in the IT systems of the airplane operator. The sampling technique and method (number of samples) is based on the results of the risk analysis, which has to be adjusted if for instance the samples reveal an insufficient data transfer process between the primary data and the corresponding value in the IT systems of the airplane operator (whose values do not match). The sampling has to be representative of the overall population (reporting year and control activities in place). The sample size will be stated in the Verification Report. It is highly recommended to use computer assisted auditing techniques and not rely solely on samples.

d. Despite the comparison between primary data and the data included in the IT system (and later processed in the Emissions Report) of the airplane operator, it is important to also develop an understanding of the data quality of all data that will be used to calculate the emissions figures in the Emissions Report. Therefore, it is absolutely essential that the verification body have a sufficient understanding and also practical experience in applying analytical procedures to large datasets. In most cases, it will be necessary that the verification body request the airplane operator to provide an export file of all relevant data from the IT system of the airplane operator to apply cross and consistency checks. Verification bodies should develop a set of standard cross checks already implemented in an appropriate spreadsheet software. This

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allows verification bodies to instantly calculate key indicators regarding data quality and consistency by simple copy paste of data in the spreadsheet software. Data supplied by the airplane operator can be split into separate files if the spreadsheet software is not capable of processing large amount of data sets. The verification body should invest a sufficient amount of time in developing its own appropriate cross checks, this can include for example:

- (1) Calculate average fuel burns and apply them on individual flights as reference (check whether maximum, minimum and average fuel burn per hour is reasonable or can be explained by airplane operator);
- (2) Maximum tank capacity and uplift per flight;
- (3) Average fuel burn according to airplane age;
- (4) Calculate average densities, including graphical representation to identify any data pattern, average fuel density at specific aerodromes and potential deviations;
- (5) Expected fuel burn for data gaps in comparison to estimated emissions;
- (6) Track airplane registrations within the airplane operator's data to check consistency of data;
- (7) Use of data (e.g. invoices) from air navigation service providers if available in a digital format; and
- (8) Checks to ensure the correct set of State pairs included in the offsetting requirements of GACAR 157.

8.Fleet and operations data

a. Critical to the verification is confirmation that the airplane operator has correctly identified all of its international flights for accounting purposes in GACAR 157. Verification of the flight data set should include:

- (1) Comparison of the fleet provided in the Emissions Report, and therefore being used to track

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GACAR 157-related flight activities, with the information of the applicable air operator certificate(s) throughout the reporting period;

(2) Identifying lease agreements within the reporting year and their impact on the reported emissions, including contractual beginning and end of lease, cause for lease, responsibilities, data transfer, and applicable control procedures;

(3) Systematic cross-checks with air traffic control invoices;

(4) Confirmation of the attribution method used by the airplane operator to ensure that all international flights during the reporting year have been appropriately accounted for including data filters or procedures used to determine the correct offsetting requirements under GACAR 157 for a specific year (included and excluded State pairs);

(5) Confirmation that the airplane operator has correctly applied technical exemptions, including internal attribution of specific flight service types such as humanitarian and medical, which qualify for an exemption under GACAR 157, are assigned correctly and in accordance with GACAR 157. Data filters used for exempted flights are working properly; and

(6) Evaluation of the completeness and accuracy of the data set.

b. Further considerations related to each of these are detailed below.

III. Reported airplane fleet

a. The verification team should compare the fleet of airplanes reported in the Emissions Report with that reported in the Emissions Monitoring Plan for the purpose of identifying any major differences between the two. For the most part, differences are expected and would not be considered material. If a major difference is identified, for example, where very few of the airplane listed in the approved Emissions Monitoring Plan appear to have been used during the actual reporting year, the verification body should investigate further. Both commercial fleet databases and free solutions available online may help building up confidence in the actual fleet size and composition.

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IV. Flight attribution

a. The verification body must confirm that all flights have been accounted for and attributed appropriately to the airplane operator. In this context, it is important to check that all flights are included in the reporting. As a basis for such a check, the verification body must understand how flights are to be attributed to airplane operators in the GACAR 157 framework.

b. The Emissions Monitoring Plan requires that airplane operators specify the means for having its international flights attributed to it. Accordingly, the Emissions Report should specify any differences from the Emissions Monitoring Plan.

c. Two potential means of flight attribution are possible. These are as follows:

(1) ICAO Designator: where the ICAO Designator (or Designators) is used in Item 7 of the operator's flight plans as means for flight attribution. It should be noted that more than one ICAO Designator may only be used by an airplane operator in exceptional cases where GACA has explicitly approved this; and

(2) Registration marks: where the operator does not use an ICAO Designator, but rather, uses the nationality or common mark and the registration mark of the airplane in Item 7 of the flight plan as a means for flight attribution. This option requires that the operator possess an AOC and that a copy of this AOC be provided with the Emissions Monitoring Plan to GACA.

d. Using a risk-based approach, the verification body should conduct verification activities focused on testing the accuracy and reliability of the attribution method used by the airplane operator to ensure that all international flights during the reporting year have been appropriately accounted for. This includes access to the airplane operator's flight operations management software and databases, interviews with responsible staff of the airplane operator, as well as cross-checks with air traffic control invoices.

e. In the context of airplane designation, the verification body should be aware of the following:

(1) In many cases, persons or firms are shown as (business) airplane owners in GACA's airplane register. These may not be the actual airplane operator;

(2) An airplane registration may be shown on more than one Emissions Report, as the airplane

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concerned may be operated by a number of airplane operators during the same year;

(3) GACA's airplane registry reissues airplane registrations during the year. It is therefore possible for more than one airplane to carry the same registration during a reporting year;

(4) An airplane operator with a wholly owned subsidiary airplane operator that is legally registered in the KSA can be treated as a single consolidated airplane operator liable for compliance with the requirements under CORSIA. If such a consolidated approach is taken for a group of carriers, verification has to be conducted at the group level and not at the individual airplane operator level; and

(5) Leasing arrangements including code sharing, dry leasing, wet leasing and long or short term leasing should have no bearing on flight attribution. The ICAO Designator in Item 7 of the flight plan or, if the ICAO Designator is not available, the registration mark of the airplane is the determining factor for assessing whether a flight falls under the responsibility of an airplane operator to monitor and report on that particular flight. If it cannot be determined by the ICAO Designator or the registration mark that a particular flight falls under the responsibility of an airplane operator, the flight should be allocated to the owner of the airplane.

V. Data set completeness and accuracy

a. An important verification activity includes assessing the completeness of the reported flight data set to provide assurance that the airplane operator has appropriately accounted for its international flights in its Emissions Report. This requires access to the airplane operator's traffic data and may also be assisted by timetable data and other data on airplane operator's traffic from e.g. air traffic control sources. It should be noted that timetable and other data submitted within the GACAR 157 framework (Emissions Monitoring Plan, Emissions Report) may not always be a perfect match, (e.g. because data from external providers may not be totally aligned with the applicability requirements of GACAR 157, because a flight included in a timetable may not actually be operated on a given day or because the geographical scope of external data may not be fully consistent with the geographical scope of the CORSIA). The verification body also needs to check the procedures and control activities that the airplane operator has in place to ensure completeness of flights.

b. Short-term airplane leasing arrangements (either dry or wet leased) can increase the verification risk depending on their complexity. Hence, the verification team should be aware of any leasing arrangements and should confirm that international flights using leased airplane are appropriately accounted for in the

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Emissions Report. In general, the collection of data by the airplane operator is regulated through the leasing agreement.

c. During the verification, the verification body will check the control activities the airplane operator has in place to ensure accurate data is transferred (e.g. leasing agreements, cross-checks on manual input of collected data in internal systems, electronic interface if IT systems are used etc.). To ensure reproducibility of the determination of the emissions by verification bodies or GACA, the airplane operator will ensure that data on the leased airplane is documented.

VI. Application of technical exemptions

a. GACAR 157.21 defines the scope of applicability of MRV requirements and also includes specific exemptions. During the verification, the verification body has to check whether the airplane operator has indeed applied the scope of applicability and exemptions correctly. It is not sufficient to just rely on the applied filters in the flight database to identify or mark specific flights that are outside the scope of applicability. The airplane operator should be able to provide procedural instructions on how flight service types (e.g., medical) are being attributed to specific flights. The verification body has to check whether these procedures and the corresponding understanding is in accordance with the requirements of GACAR 157. In very rare cases there might be the need to define additional flight service types. Interviews in the control center of the airplane operator might support to gain sufficient evidence that staff applies flight service types correctly.

9. Detailed assessment of Fuel Use Monitoring Methods (as described in GACAR 157, Appendix C) applied by the airplane operator

a. Given the ability to choose from different Fuel Use Monitoring Methods as described in Appendix A, the verification body should not only ensure the correct application of the method(s) but also verify that the chosen approach is appropriate in terms of data availability and robustness given the unique operating environment of the specific airplane operator. In this regard the verification body can, if deemed useful and if data is sufficiently available, use other Fuel Use Monitoring Methods to cross-check whether the reported emissions are reasonable. Some additional CORSIA and aviation specific details are given below.

I. General

a. The verification body has to evaluate whether the airplane operator applies the Fuel Use Monitoring Method(s) correctly throughout the entire fleet and different airplane types, as specified in the Emissions

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Monitoring Plan. This also includes whether ACARS triggers used for GACAR 157 are identically set on different airplane types (if applicable and if not specified differently in the Emissions Monitoring Plan). This also has to be evaluated for leased airplanes (e.g. wet leasing, short-time arrangements);

b. Appendix B does contain specific limitations on what can be defined as block-off and block-on values under GACAR 157. It is the responsibility of the verification body to assess whether the actual measurement points are within the applicable definitions;

c. Different systems of the airplane operator might contain different values regarding the block-off and block-on fuel, fuel uplift, block hours, and density values for precisely the same flight. It is the responsibility of the verification body to determine the actual value that is closest to the true value;

d. IT systems might include provisions for rounding when processing data into the next application (e.g. emissions module). It is the responsibility of the verification body to determine the impact of this rounding;

e. The verification body should check whether the block hour calculation follows the definitions as outlined in Appendix B, especially with regard to the definitions of block-off and block-on; and

f. The verification body should make use of other potential data sources to cross-check the general plausibility of the total fuel consumption determined by the application of a Fuel Use Monitoring Method. This could include cross-checking the total fuel consumption as purchased from financial accounting systems versus total fuel consumption as recorded from flight operations systems.

II. Method A and Method B

a. Due to the complexity of this Fuel Use Monitoring Method, the verification body should assess in detail whether the airplane operator has indeed applied the method correctly. This especially refers to Method A as the value ‘fuel in tanks once fuel uplift is completed’ is a rather unusual data point in airplane operations, which should not be mistaken with the far more common block-off fuel.

b. Due to the high number of data points per flight required to calculate the fuel consumption, these fuel monitoring methods are rather error prone.

c. The verification body should evaluate whether the actual quality of data, data flows and processes of the airplane operator indeed allow for the application of this Fuel Use Monitoring Method.

d. Potential results of the above assessment should be reflected in the risk analysis.

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III. Block-off / Block-on

a. This Fuel Use Monitoring Method does include data points that are commonly used in airplane operations.

IV. Fuel Uplift

a. The verification body should give special attention to the actual data source used to determine the fuel uplift. Different options (e.g., fuel slip vs. fuel uplift) may be available.

b. The verification body should make use of accounting information.

c. The verification body should evaluate if the distribution of fuel uplifts in case of flights without fuel uplift is applied in accordance with Appendix B.

V. Fuel Allocation with Block Hour

a. The average fuel burn ratio (AFBR) is critical for the determination of the total fuel consumption (small deviation has a large impact on the total emissions). Therefore, it is essential that the verification body thoroughly checks the correct determination of the AFBR. This includes the assessment whether the AFBRs have been indeed determined by using actual data from the current reporting year.

b. The verification body might use the Fuel Uplift monitoring method to cross check calculation results as this fuel monitoring method is implicitly included in the fuel allocation with Block Hour method.

10. Detailed assessment of fuel monitoring methods applied by the airplane operator (ICAO CORSIA CERT)

a. GACAR 157, Appendix C provide Fuel Use Monitoring Methods and CO₂ Estimation methods (implemented in the ICAO CORSIA CERT). Fuel Use Monitoring Methods as described in GACAR 157, Appendix C must be used by airplane operators that have annual CO₂ emissions equal to or greater than the specified threshold for the 2019-2020 period and for the 2021-2035 periods. Airplane operators whose annual CO₂ emissions fall under this same threshold have the option of using the ICAO CORSIA CERT. GACAR 157.23 also specifies the procedures that the airplane operator must follow when the threshold is crossed in any one year.

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b. For this reason, a key verification activity involves confirming that the airplane operator continues to be eligible for the monitoring method it is using, as approved in its Emissions Monitoring Plan. If the airplane operator crosses the thresholds for eligible monitoring methods, the verification body must check that the airplane operator continues to be in compliance with the requirements related to changing monitoring methods, as specified in GACAR 157.23. Additional guidance relating to the thresholds as specified in GACAR 157.23 and its interpretation is provided in Section 1.3.

c. If the verification body finds that an airplane operator using the ICAO CORSIA CERT was not eligible to use the tool in accordance with GACAR 157 and the approved Emissions Monitoring Plan, it should immediately halt the verification and advise the airplane operator to contact GACA for further guidance.

d. The verification body should first check the airplane operator's eligibility to use the ICAO CORSIA CERT i.e., for the 2019-2020 period, that its annual CO₂ emissions from international flights are less than 500 000 tons; and for the 2021-2035 period, that its annual CO₂ emissions from international flights subject to offsetting requirements are less than 50,000 tons. For airplane operators using the ICAO CORSIA CERT, the verification body should evaluate the correct application of the ICAO CORSIA CERT to estimate emissions (e.g. by carrying out interviews with responsible staff of the airplane operator).

11. Checking fuel density

a. If the fuel in tanks and fuel uplift is measured in volumes, the airplane operator has to use a fuel density value (actual or standard) to convert these volumes to mass. Within GACAR 157, every measurement of fuel in tanks performed by the airplane operator to determine the mass of fuel does not need special attention by the verification body as it is assumed that such safety critical (maintenance) aspects have been sufficiently addressed by the responsible national aviation authority. Consequently, the verification body should focus its activities on verifying the GACAR 157 density requirements regarding fuel uplift, as described in GACAR 157.23 and specified in the airplane operator's Emissions Monitoring Plans, have been correctly applied according to the airplane operator's standard operating fuel data management procedures regarding density. The verification body will check whether the same fuel density values used for actual airplane operations are being applied in determining fuel mass for reporting purposes under GACAR 157.

12. Assessing handling of data gaps for airplane operator using Fuel Use Monitoring Methods as described in GACAR 157.29

a. If relevant data for the calculation of the airplane operator's emissions for one or more flights are missing

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or unreasonable, the airplane operator must use secondary data as described in the approved Emissions Monitoring Plan (e.g. data from paper records instead of automatically transmitted ACARS data items) to close the data gaps. If this should not be possible, the airplane operator will estimate the emissions according to the approved ICAO CORSIA CERT. The verification body has to check whether the procedures described in the Emissions Monitoring Plan are sufficiently established at the airplane operator to allow the use of secondary data, whether the ICAO CORSIA CERT has been applied correctly, and whether the total amount of estimated data gaps exceeds the applicable threshold of 5 per cent, as described in GACAR 157.29. In such cases the verification body has to evaluate whether the given explanations of the airplane operator in the Emissions Report are detailed enough to allow an assessment by GACA on whether the data gaps were inevitable from a technical or commercial point of view, and what activity may have been initiated to reduce the number of data gaps below 5 per cent in future Emissions Reports. The provided details should also serve as a basis for GACA to assess whether the Emissions Monitoring Plan of the airplane operator will need to be updated.

b. A specific data gap occurring several times over a longer period of time may also show that the control activities of the airplane operator are not functioning correctly. The verification body has to therefore assess the frequency of specific data gaps and the effectiveness of control activities implemented to avoid these data gaps. The verification body needs to assess whether the control activities are effective (e.g., whether IT systems, automatically transferring data, are secure and functioning properly, or whether the airplane operator has built in manual controls to ensure that no data gaps occur).

13. Use of CORSIA eligible fuel

a. In accordance with GACAR 157 §157.35, airplane operators may claim emissions reductions from the use of CORSIA eligible fuel that meet the CORSIA Sustainability Criteria as defined within the ICAO Document entitled “CORSIA Sustainability Criteria for CORSIA eligible Fuels” that is available on the ICAO CORSIA website. These CORSIA eligible fuels can be produced and uplifted anywhere in the world. However, to be eligible for recognition under the scheme, the total volume of CORSIA eligible fuel purchased must satisfy reporting requirements.

b. In general, verification bodies are not expected to audit the CORSIA eligible fuel producers directly. Focus should be on confirming that the sustainability documentation provided by the fuel producers through the airplane operator is reliable and from CORSIA approved Sustainability Certification Schemes, and that the reported batch volumes/mass are reasonable and align with Certificates of Analysis and other supporting internal and external documentation (e.g., invoices, delivery documentation).

c. A verification body should assess airplane operator controls ensuring that the fuel they are purchasing meets CORSIA sustainability criteria. Any concerns with the sustainability certification or amount of fuel

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purchased should be flagged to the airplane operator, who should request the producer to allow access to additional records for the purpose of the verification (right to audit provision). In most cases this will only involve the exchange of additional information such as certification report or internal audit documents. An on-site visit by a verification body would only be expected in extremely rare cases where the CORSIA eligible fuel claim is large but the gathered evidence very limited.

d. The quality control assurances of CORSIA eligible fuel producers include declarations and/or process certifications, with periodic audits by verifiers, purchasers, or trusted entities. The process certifications, including the sustainability credentials, provide assurance that the CORSIA eligible fuel producer has established business processes to prevent double counting, and the periodic audits verify that the producer is following their established procedures. Purchasers and GACA may elect to independently audit the production records of the CORSIA eligible fuel producer in order to provide further assurance.

e. Although the airplane operator and verification body should have access rights to this information, auditing fuel producers should only be conducted on an “as needed” basis and should not be considered a regular activity within the verification.

f. The assessment of verification risk should focus primarily on the risk associated with any gaps between the underlying sustainability certification scope and the required scope to gather sufficient evidence for accounting for an emissions reductions claim within the CORSIA. This includes:

(1)The assessment of potential risks due to the potentially limited certification scope of CORSIA eligible fuel used, which result in procedures outside the responsibility of the airplane operator that are not subject to a third party oversight and analysis whether the airplane operator takes part in any other voluntary or mandatory scheme with the option to claim CORSIA eligible fuels. As with all other risk related evidence gathered, it is necessary to adjust the verification plan regarding data requirements (e.g., contact with CORSIA eligible fuel producer necessary or not). A verification body should take verification and certification statements from other accredited bodies into account.

(2)Based on the identified need for documentation as per (a) above, the verification body should assess whether the airplane operator has all required internal and external documentation associated with CORSIA eligible fuels claim available (documentation complete).(3)Data analysis to confirm that all fuels documentation is correct for the full emissions reductions claim:

- i. Confirm fuel type(s)/pathway(s) identified is eligible under CORSIA;
- ii. Confirm correct life cycle emissions value(s) identified and applied;

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- iii. Review an airplane operator's data flows, procedures, control activities (standalone for CORSIA eligible fuels or combined with other aviation fuels), access internal audit documentation where available;
 - iv. Cross-check volumes and/or mass of CORSIA eligible fuels claimed with purchase agreements, invoices, delivery documentation, certificates of analysis, acknowledgements of receipts, etc.;
 - v. Identify whether the airplane operator has sold any batches of CORSIA eligible fuels and ensure that appropriate control activities are in place;
 - vi. Confirm with sufficient evidence that the CORSIA eligible fuels satisfy the CORSIA Sustainability Criteria and is reliable for each CORSIA eligible fuels claim:
 - 1. Fuel producer satisfied the criteria at the time of batch production;
 - 2. Certification was valid at the time of batch production;
 - 3. Airplane operator controls to monitor status of certification are appropriate and sufficient;
 - 4. Mitigation measures undertaken according to the risk assessment in (a) above (e.g., contact with CORSIA eligible fuels producer, access to internal audit reports).
- (4) Confirm that emission reductions calculation is correct and in accordance with GACAR §157.35
- (5) Confirm that there are no indications that claimed batches have been claimed by the airplane operator under any other schemes it has participated in during the current compliance period, as well as the compliance period immediately preceding it:
- i. Checking declarations by airplane operator on other schemes it participated in within the current and previous compliance period (internal documentation, however also externally available information such as sustainability report);
 - ii. Seeking additional paperwork/information from airplane operator related to claims made

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under these other programs and cross checking with the claim;

iii. If available, cross-checking the claim with relevant information from the other scheme about the claim made by the airplane operator (i.e., public info about the airplane operator's claim, any associated fuel registry etc.); and

iv. Following any additional guidance from GACA on how to check this element within GACA.

14. Completing the verification

a. To form a conclusion on whether in all material respects, the amount of emissions stated in the Emissions Report is fairly presented and quantified in accordance with GACAR 157 §157.27 and the Emissions Monitoring Plan, the following must be considered:

(1) The appropriateness and sufficiency of the evidence;

(2) The verification objectives, scope and criteria;

(3) The adherence of the airplane operator to the Emissions Monitoring Plan and requirements in GACAR 157 §157.27; and

(4) The materiality of any identified misstatements/discrepancies.

Template of verification report (prepared by the verification body)

a. This section provides a template version of a Verification Report for use by verification bodies for CORSIA purposes.

VI. Verification body

a. The verification body must be accredited to ISO 14065:2013, and meet the following additional requirements to be eligible to verify the Emissions Report, and the Emissions Unit Cancellation Report where applicable, of an airplane operator. The following documents should be used as normative references

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that provide guidance for the application of this E-Book:

- (1) Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA);
- (2) The International Accreditation Forum (IAF) document entitled, “IAF Mandatory Document for the Application of ISO 14065:2013 (IAF MD 6:2014)”; and
- (3) The International Organization for Standardization (ISO) document entitled, “ISO 14066:2011 Greenhouse gases – Competence requirements for greenhouse gas validation team and verification teams”.

I. Avoidance of conflict of interest (ISO 14065:2013 section 5.4.2)

- a. If the leader of the verification team undertakes six annual verifications for one airplane operator, then the leader of the verification team must take a three consecutive year break from providing verification services to that same airplane operator. The six-year maximum period includes any greenhouse gas verifications performed for the airplane operator prior to it requiring verification services under this Volume.
- b. The verification body, and any part of the same legal entity, must not be an airplane operator, the owner of an airplane operator or owned by an airplane operator.
- c. The verification body, and any part of the same legal entity, must not be a body that trades emissions units, the owner of a body that trades emissions units or owned by a body that trades emissions units.
- d. The relationship between the verification body and the airplane operator must not be based on common ownership, common governance, common management or personnel, shared resources, common finances and common contracts or marketing.
- e. The verification body must not take over any delegated activities from the airplane operator with regard to the preparation of the Emissions Monitoring Plan, the Emissions Report (including monitoring of fuel use and calculation of CO₂ emissions) and the Emissions Unit Cancellation Report.
- f. To enable an assessment of impartiality and independence by the national accreditation body, the verification body must document how it relates to other parts of the same legal entity.

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II. Management and personnel (ISO 14065:2013 section 6.1)

- a. The verification body must establish, implement and document a method for evaluating the competence of the verification team personnel against the competence requirements outlined in ISO 14065:2013, ISO 14066:2011 and paragraphs 14.III (a)(1), (2) and (3) of this Appendix E.
- b. The verification body must maintain records to demonstrate the competency of the verification team and personnel in accordance with paragraph 14.III (a)(4) of this Appendix E.

III. Competencies of personnel (ISO 14065:2013 section 6.2)

- a. The verification body must:

- (1) Identify and select competent team personnel for each engagement;
- (2) Ensure appropriate verification team composition for the aviation engagement;
- (3) Ensure the verification team, at a minimum, includes a team leader who is responsible for the engagement planning and management of the team;
- (4) Ensure continued competence of all personnel conducting verification activities, including continual professional development and training for verifiers to maintain and/or develop competencies; and
- (5) Conduct regular evaluations of the competence assessment process to ensure that it continues to be relevant for this E-Book.

IV. Validation or verification team knowledge (ISO 14065:2013 section 6.3.2)

- a. The verification team as a whole, and the independent reviewer, must demonstrate knowledge of:

- (1) The requirements as outlined in this E-Book, the Assembly Resolution A39-3, the Environmental Technical Manual (Doc 9501) - Volume IV, and any public ICAO explanatory material;
- (2) The verification requirements as outlined in this E-Book Section 6, and Environmental

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Technical Manual (Doc 9501) - Volume IV, including materiality threshold, verification criteria, verification scope and objectives and the Verification Report preparation and submission requirements;

(3)The eligibility criteria for technical exemptions, scope of applicability, State pair phase-in rules, and State pair coverage as outlined in this Volume and the Assembly Resolution A39-3;

(4)The monitoring requirements as outlined in this E-Book Section 4; and

(5)The national requirements in addition to the provisions set out in this E-Book.

b. When conducting the verification of an Emissions Unit Cancellation Report, only section 8 (a) must be applicable

V. Validation or verification team technical expertise (ISO 14065:2013 section 6.3.3)

a. The verification team as a whole, and the independent reviewer, must demonstrate knowledge in the following technical competencies:

(1)General technical processes in the field of civil aviation;

(2)Aviation fuel and its characteristics, including CORSIA eligible fuel;

(3)Fuel related processes including flight planning and fuel calculation;

(4)Relevant aviation sector trends or situations that may impact the CO₂ emissions estimate;

(5)CO₂ emissions quantification methodologies as outlined in this E-Book Section 6, including assessment of Emissions Monitoring Plans;

(6)Fuel use monitoring and measurement devices, and related procedures for monitoring fuel use related to greenhouse gas emissions, including procedures and practices for operation, maintenance and calibration of such measurement devices;

(7)Greenhouse gas information and data management systems and controls, including quality management systems and quality assurance/quality control techniques;

(8)Aviation related IT systems such as flight planning software or operational management

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systems;

(9) Knowledge of approved CORSIA Sustainability Certification Schemes relevant for CORSIA eligible fuels under this E-Book, including certification scopes; and

(10) Basic knowledge of greenhouse gas markets and emissions units program registries.

b. Evidence of the above competencies must include proof of relevant professional experience, complemented by appropriate training and education credentials.

c. When conducting the verification of an Emissions Report, 5 (a) (1) to (9) must be applicable. d. When conducting the verification of an Emissions Unit Cancellation Report, only 5 (A) (7) and (10) must be applicable.

VI. Validation or verification team data and information auditing (ISO 14065:2013 section 6.3.4)

a. The verification team as a whole must demonstrate detailed knowledge of ISO 14064-3:2006, including demonstrated ability to develop a risk-based verification approach, perform verification procedures including assessing data and information systems and controls, collect sufficient and appropriate evidence and draw conclusions based on that evidence.

b. Evidence of data and information auditing expertise and competencies must include previous professional experience in auditing and assurance activities, complemented by appropriate training and education credentials.

VII. Use of contracted validators and verifiers (ISO 14065:2013 section 6.4)

a. The verification body must document roles and responsibilities of the verification personnel, including contracted persons involved in the verification activity.

VIII. Outsourcing (ISO 14065:2013 section 6.6)

a. The verification body must not outsource the final decision on the verification and the issuance of the verification statement.

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b. The independent review must only be outsourced as long as the outsourced service is appropriate, competent, and covered by the accreditation.

IX. Confidentiality (ISO 14065:2013 section 7.3)

a. The verification body must ensure it has the express consent of the airplane operator prior to submission of the verified Emissions Report, the Emissions Unit Cancellation Report where applicable, and the Verification Report to GACA. The mechanism for authorizing this consent must be specified in the contract between the verification body and airplane operator.

X. Records (ISO 14065:2013 section 7.5)

a. The verification body must keep records on the verification process for a minimum of ten years, including:

- (1) Client's Emissions Monitoring Plan, Emissions Report and Emissions Unit Cancellation Report where applicable;
- (2) Verification Report and related internal documentation;
- (3) Identification of team members and criteria for selection of team; and
- (4) Working papers with data and information reviewed by the team to allow for an independent party to assess the quality of the verification activities and conformance with verification requirements.

XI. Agreement (ISO 14065:2013 section 8.2.3)

a. The contract between verification body and airplane operator must specify the conditions for verification by stating:

- (1) Scope of verification, verification objectives, level of assurance, materiality threshold and relevant verification standards (ISO 14065, ISO 14064-3, GACAR 157 and the Environmental Technical Manual, Volume IV);
- (2) Amount of time allocated for verification;

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- (3) Flexibility to change time allocation if this proves necessary because of findings during the verification;
- (4) Conditions that have to be fulfilled to conduct the verification such as access to all relevant documentation, personnel and premises;
- (5) Requirement of the airplane operator to accept the audit as a potential witness audit by national accreditation body's assessors;
- (6) Requirement of the airplane operator to authorize the release of the Emissions Report, the Emissions Unit Cancellation Report, where applicable, and the Verification Report by the verification body to GACA; and
- (7) Liability coverage.

[1] Definitions of strategic analysis are contained in the IAF Mandatory Document for the Application of ISO 14065:2013, Issue 2 (IAF MD 6:2014).

[2] Definitions of the assessment of risks are contained in the IAF Mandatory Document for the Application of ISO 14065:2013, Issue 2 (IAF MD 6:2014).

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CORSA

Verification Report

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[General information](#)

[Process and analysis](#)

[Conclusions](#)

[Concluding verification statement](#)

-

Template Information

Template provided by:	
Version (publication date):	

SCOPE OF VERIFICATION REPORT

Please specify which type of report is being verified (aeroplane operator's Emissions Report with or without CORSIA eligible fuels and/or an aeroplane operator's Emissions Unit Cancellation Report).

Note I: When conducting the verification of an Emissions Unit Cancellation Report exclusively, only the points a), b), c), d), f), g), h), m), p), q), r) and s) must be applicable.

Note II: The verification body has to provide a conclusion on each of the verification objectives, as applicable, in the concluding verification statement.

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IDENTIFICATION

Name of the verification body

Please enter the name of the verification body. This name should be the legal entity.

--

Address of the verification body

Please enter the department and address of the verification body.

Department:	
Address line:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

Information on verification team members

Please enter the contact information of the verification team leader. Please provide address details if different from a 1).

Position within the company:	
First name:	
Surname, academic title:	
Role and expertise of the team member within the verification team:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

Please enter the contact information of additional verification team members.

Position within the company:	
First name:	
Surname, academic title:	
Role and expertise of the team member within the verification team:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	

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City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

Please enter the contact information of additional verification team members.

Position within the company:	
First name:	
Surname, academic title:	
Role and expertise of the team member within the verification team:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

Please enter the contact information of additional verification team members.

Position within the company:	
First name:	
Surname, academic title:	
Role and expertise of the team member within the verification team:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

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Information on independent reviewer

Please enter the contact information of the independent reviewer.

Position within the company:	
First name:	
Surname, academic title:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

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TIME ALLOCATION AND SCOPE OF THE VERIFICATION

Total time of verification

Please enter the dates on which the verification was carried out and the total time required for the verification in working days, including revisions.

Scope of the verification

Please indicate the scope of the verification. This must include the time period covered by the verification and the verification boundaries (organization, physical). Include whether one or more site visits were conducted and what elements, if any, were conducted remotely.

CORSIA eligible fuels

If the verification includes a claim of CORSIA eligible fuels, please indicate the source of the CORSIA eligible fuel information and if direct access to the fuel producer was required and provided.

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GENERAL INFORMATION

Impartiality and avoidance of conflict of interest assessment

Please describe the main results of impartiality and avoidance of conflict of interest assessment.

Verification criteria

Please specify the criteria against which the Emissions Report was verified (e.g. version of EMP; Annex 16, Volume IV; CORSIA Implementation Elements; specific national legislation; Environmental Technical Manual (Doc 9501), Volume IV, etc.).

Information and data used of the aeroplane operator

Please specify which data and documents provided by the aeroplane operator were used by the verification body to carry out verification activities (e.g. list of flight activities exported from the Operational Management System as of dd/mm/yy, flight logs and ACARS messages of the following flights, instructions for flight crews for use of density information of fuel as contained in document xyz, etc.).

PROCESS AND ANALYSIS

Strategic analysis and assessment of risk

Please specify the main results of the strategic analysis and assessment of risk.

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Verification activities

Please describe the verification activities undertaken and their corresponding results. Please include detailed information on whether the audit took place on- or off-site. This includes the precise place and in case of a remote audit, detailed procedural information on how the verification was technically conducted.

Data sampling

Please describe the procedures of data sampling and testing conducted, including records or evidence sampled, sample size, and sampling method(s) used.

Results of data sampling

Please specify the results of all data sampling and testing, and name the cross-checks applied.

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Compliance with the Emissions Monitoring Plan

Please indicate whether the monitoring was performed according to the Emissions Monitoring Plan. If not, please specify and assess deviations (materiality).

Non-compliances of the Emissions Monitoring Plan

Please specify any non-compliances of the Emissions Monitoring Plan with Annex 16, Volume IV. In case any potential non-compliances of the Emissions Monitoring Plan with Annex 16, Volume IV are found, please specify them and consult the State to which the aeroplane operator is attributed as to whether it is necessary for the aeroplane operator to revise the Emissions Monitoring Plan and resubmit it to the State for approval.

Non-conformities and misstatements identified

Please list identified non-conformities and misstatements. Please describe how these have been resolved.

CONCLUSIONS

Data quality and materiality

Please specify the conclusions on data quality.

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Please specify the materiality threshold for this aeroplane operator.

Is this materiality threshold being met in the Emissions Report?

Conclusion in relation to the aeroplane operator's Emissions Report

Please specify the conclusions on the verification of the aeroplane operator's Emissions Report by providing an individual conclusion for each of the verification objectives as listed in Annex 16, Volume IV, Appendix 6, 3.2.1 (as applicable).

Conclusion in relation to the Emissions Unit Cancellation Report

Please specify the conclusions on the verification of the Emissions Unit Cancellation Report by providing an individual conclusion for each of the verification objectives as listed in Annex 16, Volume IV, Appendix 6, 3.2.2.

Justification by the verification body

Please justify the verification opinion(s).

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CONCLUDING VERIFICATION STATEMENT

Results of the independent review

Please specify the results of the independent review.

Information on independent reviewer

Please enter the contact information of the independent reviewer. Please provide address details if different from a1).

Position within the company:	
First name:	
Surname, academic title:	
Email address:	
Telephone number:	
Address line 1:	
Address line 2:	
City:	
State/Province/Region:	
Postcode/ZIP:	
Country:	

Concluding verification statement

Concluding verification statement for the Emissions Report

Please select the verification statement.

Satisfactory with comments

Please specify the non-material misstatements and non-conformities.

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Not satisfactory

Please specify why the verification statement is not satisfactory including the relevant details for each of the following situations: there are material misstatements and/or material non-conformities, the scope of the verification is too limited, or the verification body is not able to obtain sufficient confidence in the data.

Concluding verification statement for the Emissions Units Cancellation Report

Please select the verification statement.

Satisfactory with comments

Please specify the non-material misstatements and non-conformities.

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Not satisfactory

Please specify why the verification statement is not satisfactory including the relevant details for each of the following situations: there are material misstatements and/or material non-conformities, the scope of the verification is too limited, or the verification body is not able to obtain sufficient confidence in the data.

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APPENDIX F: GLOSSARY

a. The following specialized terms are used throughout this Advisory Circular 157-01 These definitions are the same as those that are used in GACAR 157.

I. Definitions:

(1) An Airplane Operator means an operator certified under GACAR part 119 or otherwise legally permitted to operate an airplane in the Kingdom of Saudi Arabia.

(2) An Aerodrome pair is a group of two aerodromes composed of a departure aerodrome and an arrival aerodrome.

(3) An Airplane owner is a Person, organization or enterprise identified in the certificate of registration of an airplane.

(4) A Baseline period is the initial period of CORSA, which establishes the reference emissions that airplane operators use as a basis for calculating offset requirements in future compliance periods.

(5) A Cancellation is the cancellation of an emissions unit is the permanent removal and single use of a CORSA Eligible Emissions Unit within a CORSA Eligible Emissions Unit Program designed registry such that the same emissions unit may not be used more than once.

(6) A Compliance Period is the compliance period for GACAR 157 is every three years beginning in 2021.

(7) A CORSA eligible fuel is a CORSA sustainable aviation fuel or a CORSA lower carbon aviation fuel, which an operator may use to reduce their offsetting requirements.

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(8) A CORSIA lower carbon aviation fuel is a fossil-based aviation fuel that meets the CORSIA Sustainability Criteria under this GACAR.

(9) A CORSIA sustainable aviation fuel is a renewable or waste-derived aviation fuel that meets the CORSIA Sustainability Criteria under this GACAR.

(10) A Domestic flight is a flight that is defined as the operation of an airplane from take-off at an aerodrome of a State or its territories, and landing at an aerodrome of the same State or its territories.

(11) An Emissions Unit is one metric ton of carbon dioxide equivalent.

(12) A Fuel uplift is the measurement of fuel provided by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight (in liter).

(13) An International flight is a flight that is defined as the operation of an airplane from take-off at an aerodrome of a State or its territories, and landing at an aerodrome of another State or its territories.

(14) A New entrant is any airplane operator whose aviation activity falls within the scope of this GACAR on or after its entry into force and whose activity is not in whole or in part a continuation of an aviation activity previously performed by another airplane operator.

(15) A Reporting period is a period that commences on 1 January and finishes on 31 December in a given year for which an airplane operator or State reports required information. The flight departure time (UTC) determines which reporting period a flight belongs to.

(16) A State pair is a group of two States composed of a departure State or its territories and an arrival State or its territories.

(17) A Systematic error is a consistent, repeatable error caused by faulty equipment, usually an incorrectly calibrated instrument or improperly used measurement device.

(18) A Verification report is an independent, systematic and sufficiently documented evaluation process of an emissions report and, when required, a cancellation of eligible emissions units report.

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(19) A Verification body is a legal entity that performs the verification of an Emissions Report and, when required, an Emissions Unit Cancellation Report, as an accredited independent third party and authorized by a Member State according to ISO 14065:2013.

(20) Verification report. A document, drafted by the verification body, containing the verification statement and required supporting information.

II. Abbreviations:

(1) CERT is the abbreviation for CO₂ Estimation and Reporting Tool

(2) CO₂ is the abbreviation for Carbon Dioxide

(3) CO_{2e} is the abbreviation for Carbon Dioxide equivalent

(4) CORSA is the abbreviation for Carbon Offsetting and Reduction Scheme for International Aviation

(5) EMP is the abbreviation for Emissions Monitoring Plan

(6) GHG is the abbreviation for Greenhouse gases

(7) MRV is the abbreviation for Monitoring, Reporting and Verification

(8) OE_y is the abbreviation for Individual aircraft operator's emissions covered by §157.21 (a) subject to offsetting in year y

(9) OGF is the abbreviation for Individual aircraft operator's growth factor

(10) OR_y is the abbreviation for Individual aircraft operator's emissions offsetting requirements

(11) S_y is the abbreviation for Sectoral emissions, including all international aviation emissions, in

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year y

(12) *SGF* is the abbreviation for Sector’s growth factor

III. Units of Measure:

a. *Non-SI units*: The non-SI units listed in Table 1 are used either in lieu of, or in addition to, SI units as primary units of measurement throughout this Advisory Circular 157-01 and are the same as those that are used in GACAR 157.

Table F-1; Non-SI units for use with SI

<i>Specific quantity</i>	<i>Unit</i>	<i>Symbol</i>	<i>Definition (in terms of SI units)</i>
Mass	ton	t	1 t = 10 ³ kg
Time	hour	h	1 h = 60 min = 3 600 s
Volume	liter	L	1 L = 1 dm ³ = 10 ⁻³ m ³

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APPENDIX G: ADMINISTRATIVE PARTNERSHIPS UNDER CORSA

1.Example of a Bilateral Agreement

Given the recognized need for cooperation between States to build partnerships in implementing the provisions of CORSIA defined in Annex 16, Volume IV, this section provides an example of a bilateral agreement on an administrative partnership (BAAP) between administrating authorities to facilitate such cooperation.

Contracting administrating authorities to the BAAP:

1) Capacity obtaining authority (COA): _____

Designated point of contact: administrating authority, name, address, phone and email

2) Airplane operators of COA affected by BAAP (airplane operators):

i) Airplane operator (1): _____

Designated point of contact: institution, name, address, phone and email

ii) Airplane operator (2): _____

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Designated point of contact: institution, name, address, phone and email

iii) Airplane operator (3): _____

Designated point of contact: institution, name, address, phone and email

3) Contracting capacity providing authority (CPA): _____

Designated point of contact: administrating authority, name, address, phone and email

2.Guiding principle of cooperation

The administrative partnership (AP) will be governed by the guiding principle of cooperation between CPA and COA.

CPA and COA enter into BAAP voluntarily and reassure that they will act in good-faith towards the CORSIA goals.

COA or airplane operators may not claim for any damages with regard to BAAP from either CPA or ICAO.

BAAP will not release a COA from its compliance obligations under GACAR 157; COA remains obliged to enact any enforcement measures against its airplane operators as CPA will not undertake any enforcement measures against the airplane operators.

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3. Basic principles of BAAP

COA obliges airplane operators to fulfil their obligations under CORSIA vis-à-vis CPA instead of COA. BAAP will not commence until COA has notified and provided proof to CPA that airplane operators are obliged to fulfil their obligations under GACAR 157 vis-à-vis CPA.

CPA will immediately notify ICAO about the contracting administrating authorities and the airplane operators (para. a) affected by the BAAP as well as the agreed scope (para. f) and duration of BAAP (para. g)

Instead of COA, CPA will execute the agreed scope of BAAP offered according to the options on MRV administrative tasks (para. f) vis-à-vis airplane operators.

CPA will be the sole point of contact for airplane operators with regard to obligations under the CORSIA pursuant to the agreed scope to prevent any administrative confusion in competence.

4. Legal grounds

GACAR 157 and AC 157-01 will serve as the sole legal basis within BAAP and are to be directly applied by CPA in executing its compliance tasks towards airplane operators.

Language, formalities, deadlines, failure of compliance

Language

CPA and COA have agreed to use _____ (agreed language) for all communication. COA will notify airplane operators to act accordingly.

Formalities

Communication between CPA and airplane operators may be oral or in written form using the agreed language. The submission of data and (___) will be processed electronically via _____. All formal decisions of CPA vis-à-vis airplane operators under CORSIA will be in written form.

CPA will be accessible for airplane operators during business days and will react promptly to requests of airplane operators within (___) business days.

COA will notify airplane operators that airplane operators submit their data directly and promptly to CPA

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according to the form provided for in Annex 16, Volume IV.

Deadlines

All deadlines of GACAR 157 are directly applicable between CPA and airplane operators.

Should CPA be of the opinion that an airplane operator is not compliant to GACAR 157, Subpart C, CPA may set a minimum deadline of (10) business days to airplane operators to resubmit missing information/data to CPA.

Failure of compliance

Should an airplane operator fail to comply with the formalities or deadlines, CPA may notify COA, respective airplane operator and ICAO about the potential non-compliance (para. h).

Scope

Table G-1. Scope of tasks covered under bilateral agreement

1	Help desk function	Provide telephone and email support to answer questions from airplane operators and verification bodies regarding technical and administrative aspects of the CORSIA. This includes services such as an email newsletter and reminders (e.g. to start contracting a verification body) and clarification questions on (very) specific technical details (e.g. of the voluntary pre-verification).	
2	Registration of Airplane operators	Maintain and update a database of master data such as identification, contact persons, and legal status. This includes the generation of automatic alerts in internet search engines to establish a process of ongoing monitoring of airplane operator activities (such as merger and acquisition activities).	
3	Establishing communication channels for secure and traceable communication	Especially for the submission of the Emissions Monitoring Plan and Emissions Report, e.g. via encrypted email. Including proof for the airplane operator that a submission has indeed taken place.	

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4	Establishing communication channels with ICAO and participation in relevant CORSIA-related administrative coordination	To receive updates on the CORSIA administrative aspects, to submit aggregated emissions data.	
5	Establish database access	E.g. to external flight data from ATC or airplane registration databases to support the assessment process of the Emissions Monitoring Plan and the order of magnitude check of the Emissions Report.	
6	Distribution of templates and additional guidance material	Download of Emissions Monitoring Plan, Emissions Report templates, additional guidance material.	
7	Check of Emissions Monitoring Plan	Assessment of Emissions Monitoring Plan on the basis of Annex 16, Volume IV and Environmental Technical Manual (Doc 9501), Volume IV (including communication with airplane operator and submission of potentially revised versions).	
8	Approval of Emissions Monitoring Plan	Formal approval of the Emissions Monitoring Plan through an official statement.	
9	Check Emissions Report	Perform order of magnitude check (including communication with airplane operator and submission of potentially revised versions).	
10	Communication with NAB	Provide feedback to national accreditation body regarding the performance of verification bodies.	
11	Announcing offsetting requirements (sectoral share) to airplane operator	Secure and reliable communication with airplane operator on the basis of submitted data of the Emissions Report.	
12	Register related tasks	Enter or confirm data relevant for any register activities	

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13	Ensuring completeness and addressing data gaps	Estimation of emissions if the airplane operator failed to submit an Emissions Report.	
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Duration

Administrative partnership (AP) may start any time after GACAR 157 has entered into force and COA has fulfilled its obligation under para. c 1) of BAAP. The starting date will be agreed on with a reference to the compliance periods and timeline in GACAR 157.

AP may last for an unlimited period or until a specified ending date preferably after each compliance period. AP may be terminated as specified according to para. i) of BAAP.

Optionally, CPA may agree with COA on a capacity building program to support COA in administering airplane operators under GACAR 157. It will be designed as a phase-out program to foster the technical and administrative proceedings for GACAR 157, Subpart C obligations. CPA and COA agree on the timeline and content of the capacity-building program individually.

Notification on non-compliance

CPA, COA and airplane operators will notify each other about any potential failures in communication between the parties or in compliance with BAAP, CPA and COA will address issues between the concerned entities to foster compliance of the airplane operators as

CPA may not undertake any enforcement measures against the airplane operators. The notification will foster the cooperation between the entities concerned to find a satisfying solution in compliance with the provisions of the

If CPA, COA or airplane operators request to address any matter a meeting will be held with the points of contact of CPA, COA or airplane operators within a period of (__) business days. Only CPA and COA may propose and decide on the proceedings to solve the matter, airplane operators may be heard.

If CPA or COA do not agree on a certain matter vis-à-vis the airplane operators, CPA or COA may continue to negotiate.

If a matter is not resolved CPA will notify ICAO about airplane operator's potential non-compliance with obligations under the CORSIA and/or under the BAAP.

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Termination

The administering authorities to the AP may withdraw from the AP upon prior notification resulting in a termination of the AP at the end of the reporting year. The statement of withdrawal has to be in written form. Airplane operators and ICAO have to be notified within (__) working days about the withdrawal from the BAAP.

Protection of airplane operator data

CPA will provide the same or higher standards for the protection of personal and business related data of airplane operators as the COA. Such data of airplane operators will be processed solely for the purposes of the performance, management and monitoring of the obligations under the CORSIA. CPA will refrain from any use, transmission or collection of such data for any other purposes, unless otherwise agreed. CPA will submit a copy of the full administrative data set to the COA within (__) months after each compliance period. Upon termination of BAAP the airplane operator may request to delete all data after the end of the following compliance period.