



International
Civil Aviation
Organization

Organisation
de l'aviation civile
internationale

Organización
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Международная
организация
гражданской
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Ref.: AN 1/17.14 – 17/129

5 December 2017

Subject: Proposal for the First Edition of Annex 16, Volume IV, concerning Standards and Recommended Practices relating to the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

Action required: Comments to reach Montréal by 5 March 2018

Sir/Madam,

1. At the 39th Session of the Assembly, held from 27 September to 7 October 2016, ICAO Member States adopted Assembly Resolution A39-3 and decided to implement the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), the first global market-based measure for any industrial sector.
2. In order to support Member States in the implementation of CORSIA, the Assembly requested the Council, to develop the Standards and Recommended Practices (SARPs) and related guidance material. In undertaking this task, a “CORSIA Package” was developed, consisting of the following components: proposed First Edition of Annex 16 – *Environmental Protection*, Volume IV – *CORSIA*; proposed new Volume IV to Doc 9501, *Environmental Technical Manual (ETM)*; and draft ICAO CORSIA Implementation Elements and Supporting Documents.
3. The proposed First Edition of Annex 16, Volume IV, as shown in Attachment A, follows a similar structure to that of the other Volumes of Annex 16, with Chapters containing CORSIA-related requirements for States and aeroplane operators on: administration; monitoring, reporting and verification (MRV) of CO₂ emissions; CO₂ offsetting requirements; and emissions units.
4. The applicability date for the proposed Annex 16, Volume IV will be 1 January 2019 (as requested in Assembly Resolution A39-3, paragraph 20). While the administrative requirements in Part II, Chapter 1, as well as MRV requirements in Part II, Chapter 2, are proposed for applicability from 1 January 2019, CO₂ offsetting requirements and related actions as per Part II, Chapter 3 and Part II, Chapter 4 are proposed for applicability from 1 January 2021.
5. May I request that any comments you wish to make be dispatched to reach me not later than 5 March 2018. The Air Navigation Commission (ANC) has specifically indicated that comments received after the due date may not be considered by the ANC and the Council. Should you anticipate a delay in the receipt of your reply, please let me know in advance of the due date. In examining the

proposed Annex 16, Volume IV, you should not feel obliged to comment on editorial aspects as such matters will be addressed by the ANC during its final review of the proposal.

6. The subsequent work of the ANC and the Council would be greatly facilitated by specific statements on the acceptability or otherwise of the proposal. Please note that for the review of your comments by the ANC and the Council, replies are normally classified as “agreement with or without comments”, “disagreement with or without comments” or “no indication of position”. If, in your reply, the expressions “no objections” or “no comments” are used, they will be taken to mean “agreement without comment” and “no indication of position”, respectively. In order to facilitate proper classification of your response, a form has been included in Attachment B which may be completed and returned together with your comments, if any, on the proposal in Attachment A.

7. To facilitate your review, reference material is available on the ICAO public website at: <https://www.icao.int/environmental-protection/Pages/market-based-measures.aspx>.

8. In addition to the reference material available on the ICAO public website, Attachment C to this letter contains the draft ICAO CORSIA Implementation Elements and Supporting Documents. The draft ICAO CORSIA Implementation Elements consist of five elements and their associated ICAO documents currently under development, which are essential for the implementation of CORSIA, directly referenced in the proposed Annex 16, Volume IV, and subject to the Council approval, once finalized, for publication. The draft Supporting Documents describe ICAO processes to manage and maintain the ICAO CORSIA Implementation Elements, as well as technical information, where applicable, on the development of the ICAO CORSIA Implementation Elements.

9. States may also provide comments on the draft ICAO CORSIA Implementation Elements by means of the response form included at the end of Attachment C. The comments will not form part of the review of the proposed First Edition of Annex 16, Volume IV, but will be considered to inform further deliberations by the Council on the ICAO CORSIA Implementation Elements.

Accept, Sir/Madam, the assurances of my highest consideration.


Fang Liu
Secretary General

Enclosures:

- A — Proposed First Edition of Annex 16, Volume IV
- B — Response form to the proposed First Edition of Annex 16, Volume IV
- C — Proposed ICAO CORSIA Implementation Elements

ATTACHMENT A to State letter AN 1/17.14 – 17/129

**PROPOSED AMENDMENT TO ANNEX 16
FIRST EDITION OF ANNEX 16, VOLUME IV**

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1. ~~Text to be deleted is shown with a line through it.~~ text to be deleted
2. **New text to be inserted is highlighted with grey shading.** new text to be inserted
3. ~~Text to be deleted is shown with a line through it~~ followed by the replacement text **which is highlighted with grey shading.** new text to replace existing text

**TEXT OF PROPOSED AMENDMENT TO THE
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES
ENVIRONMENTAL PROTECTION
ANNEX 16
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION
VOLUME IV
CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION
(CORSA)**

**INITIAL PROPOSAL
ANNEX 16, VOLUME IV – CARBON OFFSETTING AND REDUCTION SCHEME
FOR INTERNATIONAL AVIATION (CORSA)**

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FOREWORD

Historical background

Standards and Recommended Practices for Environmental Protection were first adopted by the Council on 2 April 1971 for Aircraft Noise, pursuant to the provisions of Article 37 of the Convention on International Civil Aviation (Chicago, 1944) and designated as Annex 16 to the Convention. On 11 May 1981, the Council agreed that it was desirable to include all provisions relating to environmental aspects of aviation in one Annex to the Convention; it therefore renamed Annex 16 as “Environmental Protection”, making the existing text of the Annex into Volume I — *Aircraft Noise*, and adopting the first edition of Volume II — *Aircraft Engine Emissions* on 30 June 1981. On 3 March 2017, the first edition of Annex 16 Volume III — *Aeroplane CO₂ Emissions* was adopted by the Council.

This Volume IV to Annex 16 was developed in response to a request by the ICAO Assembly which, at its 39th Session in 2016, adopted Assembly Resolution A39-3: *Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) scheme*. In this Resolution, Member States decided to implement a global MBM scheme in the form of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

Discussions on the application of MBMs as a means to limit or reduce CO₂ emissions from international civil aviation had taken place prior to the 37th Session of the Assembly in 2010, which adopted Assembly Resolution A37-19: *Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change*. Assembly Resolution A37-19 requested the Council, with the support of Member States and international organizations, to continue to explore the feasibility of a global MBM scheme by undertaking further studies on the technical aspects, environmental benefits, economic impacts and the modalities of such a scheme, taking into account the outcome of the negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) and other international developments, as appropriate, and report the progress for consideration by the 38th Session of the ICAO Assembly in 2013.

The 37th Session of the Assembly also adopted global aspirational goals for the international aviation sector of annual average fuel efficiency improvement of 2 per cent, and keeping the global net carbon emissions from 2020 at the same level (also referred to as carbon neutral growth from 2020).

The work requested by Resolution A37-19 focused on the qualitative and quantitative assessments of potential options for a global MBM scheme for international aviation. Building on this work, the 38th Session of the ICAO Assembly in 2013, through Resolution A38-18: *Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change*, decided to develop a global MBM scheme for international aviation, and requested the Council, with the support of Member States, to finalize the work on the technical aspects, environmental and economic impacts and modalities of the possible options for a global MBM scheme, including on its feasibility and practicability, taking into account the need for development of international aviation, the proposal of the aviation industry and other international developments, as appropriate, and without prejudice to the negotiations under the UNFCCC.

Assembly Resolution A38-18 further requested the Council to identify the major issues and problems, including those for Member States, and make a recommendation on a global MBM scheme that appropriately addresses them and key design elements, including a means to take into account special circumstances and respective capabilities of ICAO Member States. The Council was also requested to identify the mechanisms for the implementation of the scheme from 2020 as part of a basket of measures that also include technologies, operational improvements and sustainable aviation fuels to achieve ICAO’s global aspirational goals.

Following the 38th Session of the Assembly, the 200th Session of the Council in November 2013 supported that the Committee on Aviation Environmental Protection (CAEP) would continue to undertake technical tasks related to the development of a global MBM scheme, as requested by Resolution A38-18. The Council also decided upon the establishment of an Environment Advisory Group of the Council (EAG), which was mandated to oversee all the work related to the development of a global MBM scheme and make recommendations to the Council.

The EAG focused its work on a mandatory carbon offsetting approach as the basis for a global MBM scheme for international aviation. The EAG/15 meeting in January 2016 considered a draft Assembly Resolution text on a global MBM scheme, which was further refined throughout 2016 by two meetings of a High-level Group on a Global MBM Scheme in February and April 2016, a High-level Meeting on a Global MBM Scheme in May 2016 and a Friends of the President Informal Meeting in August 2016.

The Assembly, by adopting Resolution A39-3, requested the Council, with the technical contribution of CAEP, to develop the SARPs and related guidance material for the implementation of the Monitoring, Reporting and Verification (MRV) system under the CORSIA, and for Emissions Unit Criteria (EUC) to support the purchase of appropriate emissions units by aircraft operators under the scheme, taking into account relevant developments in the UNFCCC and Article 6 of the Paris Agreement; as well as policies and related guidance material to support the establishment of registries under the CORSIA.

Following the Assembly, the 209th Session of the Council endorsed the overall plan of preparatory activities for the CORSIA implementation, including development of the CORSIA-related draft SARPs and guidance by CAEP.

The CAEP developed International Standards and Recommended Practices for the CORSIA and, after amendment following the usual consultation with the Contracting States of the Organization, this Annex 16, Volume IV was adopted by the Council.

Table A shows the origin of amendments to the Annex 16 Volume IV over time together with a list of the principal subjects involved and the dates on which the Annex and the amendments were adopted by the Council, when they became effective and when they became applicable.

Applicability

Part I of Volume IV of Annex 16 contains definitions, abbreviations and symbols. Part II, Chapter 2 contains Standards, Recommended Practices and guidelines for monitoring, reporting and verification of an aeroplane operator's CO₂ emissions. Part II, Chapter 3 contains Standards, Recommended Practices and guidelines on an aeroplane operator's CO₂ offsetting requirements that can be reconciled using Emissions Units generated by eligible programs under Chapter 4. The relevant applicability requirements to an aeroplane operator engaged in international air navigation are specified in the individual Chapters of Volume IV of Annex 16.

Action by Contracting States

Notification of differences. The attention of Contracting States is drawn to the obligation imposed by Article 38 of the Convention by which Contracting States are required to notify the Organization of any differences between their national regulations and practices and the International Standards contained in this Annex and any amendments thereto. Contracting States are invited to extend such notification to any differences from the Recommended Practices contained in this Annex, and any amendments thereto, when the notification of such differences is important for the safety of air navigation. Further, Contracting States are invited to keep the Organization currently informed of any differences which may subsequently occur, or of the withdrawal of any differences previously notified. A specific request for notification of differences will be sent to Contracting States immediately after the adoption of each amendment to this Annex.

The attention of States is also drawn to the provisions of Annex 15 related to the publication of differences between their national regulations and practices and the related ICAO Standards and Recommended Practices through the Aeronautical Information Service, in addition to the obligation of States under Article 38 of the Convention.

Use of the Annex text in national regulations. The Council, on 13 April 1948, adopted a resolution inviting the attention of Contracting States to the desirability of using in their own national regulations, as far as is practicable, the precise language of those ICAO Standards that are of a regulatory character and also of indicating departures from the Standards, including any additional national regulations that were important for the safety or regularity of international air navigation. Wherever possible, the provisions of this Annex have been written in such a way as to facilitate incorporation, without major textual changes, into national legislation.

Status of Annex components

An Annex is made up of the following component parts, not all of which, however, are necessarily found in every Annex; they have the status indicated:

1.— Material comprising the Annex proper:

- a) *Standards and Recommended Practices* adopted by the Council under the provisions of the Convention. They are defined as follows:

Standard: Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention; in the event of impossibility of compliance, notification to the Council is compulsory under Article 38.

Recommended Practice: Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States will endeavour to conform in accordance with the Convention.

- b) *Appendices* comprising material grouped separately for convenience but forming part of the Standards and Recommended Practices adopted by the Council.

- c) *Provisions* governing the applicability of the Standards and Recommended Practices.

- d) *Definitions* of terms used in the Standards and Recommended Practices which are not self-explanatory in that they do not have accepted dictionary meanings. A definition does not have an independent status but is an essential part of each Standard and Recommended Practice in which the term is used, since a change in the meaning of the term would affect the specification.

- e) *Tables and Figures* which add to or illustrate a Standard or Recommended Practice and which are referred to therein, form part of the associated Standard or Recommended Practice and have the same status.

2.— Material approved by the Council for publication in association with the Standards and Recommended Practices:

- a) *Forewords* comprising historical and explanatory material based on the action of the Council and including an explanation of the obligations of States with regard to the application of the Standards and Recommended Practices ensuing from the Convention and the Resolution of Adoption.

- b) *Introductions* comprising explanatory material introduced at the beginning of parts, chapters or sections of the Annex to assist in the understanding of the application of the text.

- c) *Notes* included in the text, where appropriate, to give factual information or references bearing on the Standards or Recommended Practices in question, but not constituting part of the Standards or Recommended Practices.

- d) *Attachments* comprising material supplementary to the Standards and Recommended Practices, or included as a guide to their application.

Selection of language

This Annex has been adopted in six languages — English, Arabic, Chinese, French, Russian and Spanish. Each

Contracting State is requested to select one of those texts for the purpose of national implementation and for other effects provided for in the Convention, either through direct use or through translation into its own national language, and to notify the Organization accordingly.

Editorial practices

The following practice has been adhered to in order to indicate at a glance the status of each statement: *Standards* have been printed in light face roman; *Recommended Practices* have been printed in light face italics, the status being indicated by the prefix **Recommendation**; *Notes* have been printed in light italics, the status being indicated by the prefix *Note*.

It is to be noted that in the English text the following practice has been adhered to when writing the specifications: Standards employ the operative verb “shall” while Recommended Practices employ the operative verb “should”.

The units of measurement used in this document are in accordance with the International System of Units (SI) as specified in Annex 5 to the Convention on International Civil Aviation. Where Annex 5 permits the use of non-SI alternative units these are shown in parentheses following the basic units. Where two sets of units are quoted it must not be assumed that the pairs of values are equal and interchangeable. It may, however, be inferred that an equivalent level of safety is achieved when either set of units is used exclusively.

Any reference to a portion of this document which is identified by a number includes all subdivisions of that portion.

Table A. Amendments to Volume IV of Annex 16

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject(s)</i>	<i>Adopted Effective Applicable</i>
1 st Edition	2017 Steering Group Meeting of the Committee on Aviation Environmental Protection		xx June 2018 xx November 2018 1 January 2019

INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

PART I. DEFINITIONS, ABBREVIATIONS AND UNITS

CHAPTER 1. — DEFINITIONS

Administrative partnership. Delegation of administering tasks in this Volume from one State to another State(s).

Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Aerodrome pair. A group of two aerodromes composed of a departing aerodrome and an arrival aerodrome.

Aeroplane. A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

Aeroplane owner. Person(s), organization(s) or enterprise(s) identified via Item 4 (Name of owner) and Item 5 (Address of owner) on the certificate of registration of an aeroplane.

Air operator certificate (AOC). A certificate authorizing an operator to carry out specified commercial air transport operations.

Aviation alternative fuel. A non-petroleum-based drop-in aviation fuel.

Conventional aviation fuel. A petroleum-based drop-in aviation fuel.

Conversion process. A type of technology used to convert a feedstock into aviation alternative fuel.

Feedstock. A type of unprocessed raw material used for the production of aviation alternative fuel.

Flight plan. Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.

Flight time - aeroplanes. The total time from the moment an aeroplane first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight.

Note.— Flight time as here defined is synonymous with the term “block to block” time or “chock to chock” time in general usage which is measured from the time an aeroplane first moves for the purpose of taking off until it finally stops at the end of the flight.

Fuel uplift. Measurement of fuel provided by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight (in litre).

Great Circle Distance. The shortest distance, rounded to the nearest kilometre, between the origin and the destination aerodromes, measured over the earth's surface modelled according to the World Geodetic System 1984 (WGS84).

Note. – *Latitude and longitude coordinates of aerodromes can be obtained from the ICAO Location Indicators database.*

National accreditation body. Authorised body which attests that a verification body is competent to provide specific verification services.

New entrant. Any aeroplane operator that commences an aviation activity falling within the scope of this Volume 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 aeroplane operator.

Notifying State. The State that has submitted to ICAO the request for the registration of or change in the three-letter designator of an aeroplane operator over which it has jurisdiction.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Pathway. A specific combination of feedstock and conversion process used for the production of aviation alternative fuel.

Reporting period. A period which commences on 1 January and finishes on 31 December in a given year for which an aeroplane operator or State reports required information.

State pair. A group of two Contracting States composed of a departing Contracting State or its territories and an arrival Contracting State or its territories.

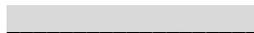
Sustainable aviation fuel. An aviation alternative fuel that meets the CORSIA Sustainability Criteria under this Volume.

Verification of report. An independent and systematic evaluation process of an emissions report and, when required, a cancellation of eligible emissions units report, which has been sufficiently documented.

Verification body. A legal entity that performs the verification of an Emissions Report and, when required, an Emissions Units Cancellation Report, as an accredited independent third party.

Verification team. A group of verifiers, or a single verifier that also qualifies as a team leader, belonging to a verification body conducting the verification of an Emissions Report and, when required, an Emissions Units Cancellation Report. The team can be supported by technical experts.

Verification report. A document, drafted by the verification body, containing the verification statement and required supporting information.



CHAPTER 2. — ABBREVIATIONS AND UNITS

Where the following abbreviations are used in Volume IV of this Annex, they have the meanings ascribed to them below:

Abbreviations

ACARS	Aircraft Communications Addressing and Reporting System
AOC	Air operator certificate
CERT	CO ₂ Estimation and Reporting Tool
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
GHG	Greenhouse gases
IAF	International Accreditation Forum
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
MRV	Monitoring, Reporting and Verification
MJ	Megajoule
RTK	Revenue Tonne Kilometres

Non-SI units

The non-SI units listed in Table 2-1 shall be used either in lieu of, or in addition to, SI units as primary units of measurement under this Volume.

Table 2-1 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	tonne	t	1 t = 10 ³ kg
time	hour	h	1 h = 60 min = 3 600 s
volume	litre	L	1 L = 1 dm ³ = 10 ⁻³ m ³

PART II. CARBON OFFSETTING AND REDUCTION SCHEME FOR INTERNATIONAL AVIATION (CORSA)

CHAPTER 1. — ADMINISTRATION

Note 1. – See also Appendix 1 for further information on administration procedures.

Note 2. – The ICAO documents referred to in this Volume of Annex 16 and listed below are material approved by the Council for publication by ICAO to support this Volume and are essential to the implementation of the CORSIA. These ICAO documents are available on the ICAO CORSIA website and may only be amended by the Council:

1. *CORSIA States for Chapter 3 State Pairs;*
2. *ICAO CORSIA CO₂ Estimation and Reporting Tool;*
3. *CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes;*
4. *CORSIA Approved Sustainability Certification Schemes;*
5. *CORSIA Sustainability Criteria for Sustainable Aviation Fuels;*
6. *CORSIA Default Life Cycle Emissions Values for Sustainable Aviation Fuels;*
7. *CORSIA Methodology for Calculating Actual Life Cycle Emissions Values;*
8. *CORSIA Eligible Emissions Units;*
9. *CORSIA Emissions Unit Eligibility Criteria;*
10. *CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA;*
11. *CORSIA Aeroplane Operator to State Attributions;*
12. *CORSIA 2020 Emissions;*
13. *CORSIA Annual Sector's Growth Factor (SGF); and*
14. *CORSIA Central Registry (CCR): Information and Data for Transparency.*

The provisions of 1.1 to 1.6 shall apply to the classifications defined in this Volume.

1.1 Attribution of international flights to an aeroplane operator

1.1.1 The aeroplane operator shall identify international flights, as defined in 1.1.2 and 2.1, that are attributed to it according to the approach in 1.1.2 and 1.1.3.

Note. – Two or more consecutive flights operated under the same flight number are considered as separate flights for the purposes of this Volume.

1.1.2 For the purpose of this Volume, an international flight is defined as the operation of an aircraft from take-off at an aerodrome of a Contracting State or its territories, and landing at an aerodrome of another Contracting State or its territories. In addition, a domestic flight is defined as the operation of an aircraft from take-off at an aerodrome of a Contracting State or its territories, and landing at an aerodrome of the same Contracting State or its territories.

1.1.3 The attribution of a specific international flight to an aeroplane operator shall be determined as follows:

- a) **ICAO Designator:** When Item 7 (aircraft identification) of the flight plan contains the ICAO Designator, that flight shall be attributed to the aeroplane operator that has been assigned this Designator;

Note 1. – ICAO Designators are contained in ICAO Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services (Doc 8585).

Note 2. – The reference to Item 7 is based on the ICAO model flight plan form contained in Appendix 2 of ICAO Procedures for Air Navigation Services – Air Traffic Management (Doc 4444).

- b) **Registration marks:** When Item 7 (aircraft identification) of the flight plan contains the nationality or common mark, and registration mark of an aeroplane that is explicitly listed in an AOC (or equivalent) issued by a State, that flight shall be attributed to the aeroplane operator that holds the AOC (or equivalent);
- c) **Emissions Monitoring Plan code:** When Item 7 (aircraft identification) of the flight plan contains a code included in an aeroplane operator's approved Emissions Monitoring Plan, as defined in 2.2.2, that flight shall be attributed to the aeroplane operator identified in the Emissions Monitoring Plan; and

Note. – A "code" refers to any group of letters, figures or a combination thereof that the aeroplane operator has used in Item 7 of the flight plan and which does not contain an ICAO Designator or a nationality or common mark, and registration mark included in an AOC.

- d) **Other:** When the aeroplane operator of a flight has not been identified via 1.1.3 a) through c), that flight shall be attributed to the aeroplane owner who shall then be considered the aeroplane operator.

Note. – See Attachment A Figure A-1 for an illustration on the process for attributing a flight to an aeroplane operator.

1.1.4 If requested by the State in which the aeroplane is registered, aeroplane owners identified via 1.1.3 d) shall provide all information necessary to identify the actual aeroplane operator of a flight.

1.1.5 The aeroplane operator may, by contract, delegate the administrative requirements of this Volume to a third party, as long as the delegation is not to the same entity as the verification body. Liability for compliance shall not be delegated.

1.1.6 **Recommendation:** *The State should ensure the correct attribution of an international flight departing from an aerodrome in its territory to an aeroplane operator using the approach in 1.1.3 and perform the required order of magnitude checks to ensure the completeness of reported data as described in 2.4.1.5.*

1.2 Attribution of an aeroplane operator to a State

1.2.1 The aeroplane operator with international flights, as defined in 1.1.2 and 2.1, attributed to it shall identify the State to which it is attributed according to the approach in 1.2.4.

1.2.2 The State shall ensure the correct attribution of an aeroplane operator to it according to the approach in 1.2.4.

1.2.3 **Recommendation:** *The State should use the ICAO document entitled "CORISIA Aeroplane Operator to State Attributions" that is available on the ICAO CORISIA website to meet its requirements under 1.2.2.*

1.2.4 The attribution of an aeroplane operator to a State shall be determined as follows:

- a) **ICAO Designator:** Where the aeroplane operator has an ICAO Designator, the State to which the aeroplane operator fulfils its requirements under this Volume shall be the Notifying State.

Note. – ICAO Designators and Notifying States are contained in ICAO Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services (Doc 8585).

- b) **Air operator certificate:** Where the aeroplane operator does not possess an ICAO Designator, but has a valid air operator certificate (or equivalent), the State to which the aeroplane operator fulfils its requirements under this Volume shall be the State that issued the air operator certificate (or equivalent).

- c) **Place of juridical registration:** Where the aeroplane operator does not possess an ICAO Designator or air operator certificate, the State where the aeroplane operator is registered as juridical person shall be the State to which the aeroplane operator fulfils its requirements under this Volume. Where the aeroplane operator is a natural person, the State of residence and registration of this person shall be the State to which the aeroplane operator fulfils its requirements under this Volume.

1.2.5 If the aeroplane 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 shall become the State to which the aeroplane operator fulfils its requirements under this Volume at the start of the next compliance period.

1.2.6 The aeroplane operator with a wholly owned subsidiary aeroplane operator that is legally registered in the same State can be treated as a single consolidated aeroplane operator liable for compliance with the requirements of this Volume, subject to the approval of the State. Evidence shall be provided in the aeroplane operator's Emissions Monitoring Plan to demonstrate that the subsidiary aeroplane operator is wholly owned.

1.2.7 The State shall submit to ICAO a list of aeroplane operators which are attributed to it according to the requirements as described in Appendix 5 Table A5-3 (Field 1), and in accordance with the timeline as defined in Appendix 1. The State may submit updates to this list to ICAO on a more frequent basis.

Note. – See Attachment A Figure A-2 for an illustration on the attribution of aeroplane operators to States.

1.3 State

1.3.1 The State shall approve the aeroplane operator compliance on the basis of satisfactory evidence that the aeroplane operator meets requirements that are at least equal to the applicable Standards specified in this Volume.

Note. — As each new edition and amendment of this Annex becomes applicable (according to Table A of the Foreword) it supersedes all previous editions and amendments.

1.3.2 The State shall not delegate enforcement of the requirements in this Volume, or their administrative tasks towards ICAO, to another State. The State may delegate administration processes of this Volume to another State through an administrative partnership based on bilateral agreement among the respective States.

Note. – A template for, and guidance on, administrative partnerships is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

1.3.3 The State providing capacity support through an administrative partnership shall notify ICAO about the contracting administrating authorities, affected aeroplane operators, scope and duration of the administrative partnership and a copy of the bilateral agreement.

1.3.4 **Recommendation:** *The State providing capacity support 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.*

1.3.5 The State receiving capacity support shall ensure that aeroplane operators attributed to it are advised of the administrative arrangements prior to start of the administrative partnership and any potential changes thereafter.

1.3.6 The State shall not 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.

1.3.7 The State shall submit to ICAO a list of verification bodies accredited in the State according to the requirements as described in Appendix 5 Table A5-3 (Field 2), and in accordance with the timeline as defined in Appendix 1. The State may submit updates to this list to ICAO on a more frequent basis.

1.4 Record keeping

1.4.1 The aeroplane operator shall keep records relevant to Chapters 2, 3, and 4 of this Part for a period of 10 years.

1.4.2 **Recommendation.** – *The aeroplane operator should keep records relevant to its CO₂ emissions per State pair during the 2019-2020 period in order to cross-check its offsetting requirements calculated by the State during the 2030-2035 compliance periods.*

1.4.3 The State shall keep records relevant to the aeroplane operator's CO₂ emissions per State pair during the period of 2019-2020 in order to calculate the aeroplane operator's offsetting requirements during the 2030-2035 compliance periods.

1.5 Compliance periods and timeline

States and aeroplane operators shall comply with the Standards in Chapters 2, 3, and 4 of this Part in accordance with the timeline as defined in Appendix 1.

1.6 Equivalent procedures

The use of equivalent procedures in lieu of the procedures specified in this Volume of Annex 16 shall be approved by the State to which the aeroplane operator has been attributed to in 1.2.

Note. — *Guidance material, including the use of equivalent procedures, is provided in the Environmental Technical Manual (Doc 9501), Volume IV– Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).*

CHAPTER 2. — MONITORING, REPORTING AND VERIFICATION (MRV) OF AEROPLANE OPERATOR ANNUAL CO₂ EMISSIONS

2.1 Applicability of MRV requirements

Note. — See also Chapter 1 for administration requirements of the State and aeroplane operator.

2.1.1 The Standards and Recommended Practices of this Chapter shall be applicable to an aeroplane operator that produces annual CO₂ emissions greater than 10 000 tonnes from the use of an aeroplane(s) with a maximum certificated take-off mass greater than 5 700 kg conducting international flights, as defined in 1.1.2, on or after 1 January 2019, with the exception of humanitarian, medical and firefighting flights.

2.1.2 **Recommendation.** — *When considering whether a flight is international or domestic, an aeroplane operator and a State should use, for the purpose of this Volume, the ICAO Manual on Location Indicators (Doc 7910) which contains a list of aerodromes and the attributed State they are attributed to. Further guidance material is also provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).*

2.1.3 The Standards and Recommended Practices of this Chapter shall not be applicable to international flights, as defined in 1.1.2, preceding or following a humanitarian, medical or firefighting flight provided such flights were conducted with the same aeroplane, and were required to accomplish the related humanitarian, medical or firefighting activities or to reposition thereafter the aeroplane for its next activity. The aeroplane operator shall provide supporting evidence of such activities to the verification body or, upon request, to the State.

2.1.4 The Standards and Recommended Practices of this Chapter shall be applicable to a new entrant aeroplane operator from the year after it meets the requirements in 2.1.1 and 2.1.3.

2.1.5 **Recommendation.** — *If the aeroplane operator is close to the threshold of annual CO₂ emissions, as defined in 2.1.1 and 2.1.3, from international flights, as defined in 1.1.2, it should consider engaging with the State to which it is attributed for guidance. Likewise, the State should carry out oversight of the aeroplane operators attributed to it, and engage with any that it considers may be close to or above the threshold. The aeroplane operator with annual CO₂ emissions below the threshold may choose to voluntarily engage with the State to which it is attributed.*

Note. — See Attachment B Figure B-1 for a process flowchart on the determination of the applicability of Chapter 2 to international flights, as defined in 1.1.2.

2.2 Monitoring of CO₂ emissions

2.2.1 Eligibility of monitoring methods

2.2.1.1 The aeroplane operator shall monitor and record its fuel use from international flights, as defined in 1.1.2 and 2.1, in accordance with an eligible monitoring method as defined in 2.2.1.2 and 2.2.1.3, and approved by the State to which it is attributed. Following approval of the Emissions Monitoring Plan, the aeroplane operator shall use the same eligible monitoring method for the entire compliance period.

Note. — Further guidance material on eligibility of monitoring methods, and associated thresholds, is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).

2.2.1.2 2019-2020 period

2.2.1.2.1 The aeroplane operator with annual CO₂ emissions from international flights, as defined in 1.1.2 and 2.1, greater than or equal to 500 000 tonnes shall use a Fuel Use Monitoring Method as described in Appendix 2.

2.2.1.2.2 The aeroplane operator with annual CO₂ emissions from international flights, as defined in 1.1.2 and 2.1 of less than 500 000 tonnes shall use either a Fuel Use Monitoring Method or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), as described in Appendices 2 and 3 respectively.

2.2.1.2.3 If the aeroplane operator's annual CO₂ emissions from international flights, as defined in 1.1.2 and 2.1, increases above the threshold of 500 000 tonnes in 2019, the State shall permit, at its discretion, the aeroplane operator to continue to use the monitoring method chosen in accordance to 2.2.1.2.2 during 2020.

2.2.1.2.4 **Recommendation:** *The aeroplane operator should use the same monitoring method during the 2019-2020 period that it expects to use during the 2021-2023 period, taking into account its expected annual CO₂ emissions during the 2021-2023 period. If the aeroplane operator needs to change monitoring method, it will submit a revised Emissions Monitoring Plan by 30th September 2020 in order to implement the new monitoring method from 1st January 2021.*

2.2.1.2.5 If the aeroplane operator does not have an approved Emissions Monitoring Plan as of 1 January 2019, it shall monitor and record its CO₂ emissions in accordance with the eligible monitoring method outlined in the Emissions Monitoring Plan that it will submit, or has submitted, to the State to which it is attributed.

2.2.1.2.6 If the aeroplane operator's Emissions Monitoring Plan, as defined in 2.2.2 is determined to be incomplete and/or inconsistent with the eligible Fuel Use Monitoring Method in Appendix 2, then the State to which the aeroplane operator is attributed shall, at its discretion, approve a different eligible Fuel Use Monitoring Method within the Emissions Monitoring Plan for a period lasting no later than 30 June 2019.

2.2.1.2.7 If the aeroplane operator does not have sufficient information to use a Fuel Use Monitoring Method, as defined in Appendix 2, the State to which the aeroplane operator is attributed shall, at its discretion, approve the use of the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) for a period lasting no later than 30 June 2019.

Note. – See Attachment B Figure B-2 for a process flowchart on the eligibility of Fuel Use Monitoring Methods during the 2019-2020 period.

2.2.1.3 2021-2035 period

2.2.1.3.1 The aeroplane operator, with annual CO₂ emissions from international flights subject to offsetting requirements, as defined in 1.1.2 and 3.1, of greater than or equal to 50 000 tonnes, shall use a Fuel Use Monitoring Method as described in Appendix 2 for these flights. For international flights, as defined in 1.1.2 and 2.1, not subject to offsetting requirements, as defined in 3.1, the aeroplane operator shall use either a Fuel Use Monitoring Method, as described in Appendix 2, or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), as described in Appendix 3.

2.2.1.3.2 The aeroplane operator, with annual CO₂ emissions from international flights subject to offsetting requirements, as defined in 1.1.2 and 3.1, of less than 50 000 tonnes, shall use either a Fuel Use Monitoring Method or the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) as described in Appendices 2 and 3 respectively.

2.2.1.3.3 If the aeroplane operator's annual CO₂ emissions from international flights subject to offsetting requirements, as defined in 1.1.2 and 3.1, increases above the threshold of 50 000 tonnes in a given year (y), and also in year (y+1), the aeroplane operator shall submit an updated Emissions Monitoring Plan by 30 September of year (y + 2). The aeroplane operator shall change to a Fuel Use Monitoring Method, as described in Appendix 2, on 1 January of year (y+3).

2.2.1.3.4 If the aeroplane operator's annual CO₂ emissions from international flights subject to offsetting requirements, as defined in 1.1.2 and 3.1, decreases below the threshold of 50 000 tonnes in a given year (y), and also in year (y+1), the aeroplane operator may change monitoring method on 1 January of year (y+3). If the aeroplane

operator chooses to change its monitoring method, it shall submit an updated Emissions Monitoring Plan by 30 September of year (y + 2).

Note. – See Attachment B Figure B-3 for a process flowchart on the eligibility of Fuel Use Monitoring Methods during the 2021-2035 Compliance Phases.

2.2.2 Emissions Monitoring Plan

2.2.2.1 The aeroplane operator shall submit an Emissions Monitoring Plan to the State to which it is attributed for approval by the State in accordance with the timeline as defined in Appendix 1. The Emission Monitoring Plan shall contain the information as defined in Appendix 4.

2.2.2.2 A new entrant aeroplane operator shall submit an Emissions Monitoring Plan to the State to which it is attributed within three months of falling within the scope of applicability as defined in 2.1.

2.2.2.3 The aeroplane operator shall resubmit the Emissions Monitoring Plan to the State to which it is attributed 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 aeroplane operator for an option under the emissions monitoring requirements, or that would otherwise affect the decision by the State to which the aeroplane operator is attributed with regard to whether the aeroplane operator's approach to monitoring conforms with the requirements).

2.2.2.4 The aeroplane operator shall also inform the State to which it is attributed of changes that would affect the State's oversight (e.g., change in corporate name or address), even if the changes do not fall within the definition of a material change.

2.2.2.5 If the aeroplane operator's Emissions Monitoring Plan is determined to be incomplete and/or inconsistent with the Emissions Monitoring Plan requirements in Appendix 4, the State to which it is attributed shall engage with the aeroplane operator to resolve outstanding issues. This may involve returning the Emissions Monitoring Plan to the aeroplane operator along with an explanation as to why the plan was found deficient, or a request for further information.

Note. – Further guidance material on the Emissions Monitoring Plan and material changes is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).

2.2.3 Calculation of CO₂ emissions from aeroplane fuel use

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

2.2.3.2 The aeroplane operator shall record the fuel density (which may be an actual or a standard value of 0.8 kg per litre) 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 shall be detailed in the Emission Monitoring Plan along with a reference to the relevant aeroplane operator documentation.

Note. – Further guidance material on the use of standard fuel density is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).

2.2.3.3 The aeroplane operator using a Fuel Use Monitoring Method, as defined in Appendix 2, shall determine the CO₂ emissions from international flights, as defined in 1.1.2 and 2.1, using the following equation:

$$CO_2 = \sum_f M_f * FCF_f$$

where:

CO_2 = CO_2 emissions (in tonnes);

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

FCF_f = Fuel conversion factor of given fuel f, equal to 3.16 (in kg CO_2 /kg fuel) for Jet-A fuel and 3.10 (in kg CO_2 /kg fuel) for AvGas or Jet-B fuel.

Note. – For the purpose of calculating CO_2 emissions the mass of fuel used includes conventional aviation fuel and sustainable aviation fuel.

2.2.4 Monitoring of sustainable aviation fuels claims

2.2.4.1 The aeroplane operator that intends to claim for emissions reductions from the use of sustainable aviation fuels shall use a sustainable aviation fuel that meets the CORSIA Sustainability Criteria as defined within the ICAO document entitled, “CORSIA Sustainability Criteria for Sustainable Aviation Fuels” that is available on the ICAO CORSIA website.

2.2.4.2 The aeroplane operator that intends to claim for emissions reductions from the use of sustainable aviation fuels shall only use sustainable aviation fuels from fuel producers that are certified by an approved Sustainable Certification Scheme included in the ICAO document entitled, “CORSIA Approved Sustainability Certification Schemes” which meet the requirements included in the ICAO document entitled “CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes” that are available on the ICAO CORSIA website.

2.2.4.3 If the aeroplane operator cannot demonstrate the compliance of the sustainable aviation fuel with the CORSIA Sustainability Criteria, then it shall be accounted for as conventional aviation fuel.

Note 1. – The provisions of this Chapter consider that aviation fuel supply chains are not segregated at aerodromes, and that sustainable aviation fuels will be typically co-mingled at various points in the fuel supply infrastructure (e.g., pipelines, storage terminals, aerodrome fuel storage systems). The sustainable aviation fuels purchased by a particular aeroplane operator may not be physically used in its aeroplane, and it will not be feasible to determine the specific sustainable aviation fuel content at the point of uplift in an aeroplane. Claims of emissions reductions from the use of sustainable aviation fuels by an aeroplane operator are based on mass of sustainable aviation fuels according to purchasing and blending records.

Note 2. – The emissions reductions from the use of a sustainable aviation fuel are calculated as part of the CO_2 offsetting requirements in Chapter 3. These calculations use the approved life cycle emissions value (LS_f) for the sustainable aviation fuel.

2.3 Reporting of CO_2 emissions

2.3.1 Aeroplane operator reporting

2.3.1.1 The aeroplane operator shall submit to the State to which it is attributed a copy of the verified Emissions Report for approval by the State and a copy of the associated Verification Report in accordance with the timeline as defined in Appendix 1.

2.3.1.2 The State shall decide on the level of aggregation (i.e., State pair or aerodrome pair) for which an aeroplane operator attributed to it shall report the number of international flights, as defined in 1.1.2 (i.e., Table A5-1 Field 7) and CO_2 emissions (i.e., Table A5-1 Field 8). The State shall inform an aeroplane operator attributed to it

whether Field 7 and 8 in the Emissions Report shall be reported at the level of State pair or aerodrome pair during the approval process for the Emissions Monitoring Plan.

2.3.1.3 The Emissions Report shall contain the information as defined in Appendix 5 Table A5-1. An aeroplane operator that uses the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) is not required to report Field 5.

2.3.1.4 **Recommendation:** *The aeroplane operator should use the standardised Emissions Report template provided in Appendix 1 of the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), or a template approved by the State to which it is attributed, for submission of information to the State to which it is attributed.*

2.3.1.5 When the aeroplane operator reports its consolidated CO₂ emissions from international flights, as defined in 1.1.2 and 2.1, during the 2019-2020 period, including subsidiary aeroplane operators, disaggregated data relating to each subsidiary aeroplane operator shall be appended to the main Emissions Report.

2.3.1.6 In specific circumstances where the aeroplane operator operates a very limited number of State pairs that are subject to offset requirements, and/or a very limited number of State pairs that are not subject to offset requirements, it may request in writing to the State to which it is attributed that such data not be published at the aeroplane operator level, as defined in Appendix 5, 3.2, explaining the reasons why disclosure would harm its commercial interests. Based on this request, the State shall determine whether this data is confidential.

Note. – In the application of 2.3.1.6 and/or 2.3.1.7, the annual CO₂ emissions of an aeroplane operator on a given State pair are considered as commercially sensitive if they are determined using a Fuel Use Monitoring Method as described in Appendix 2.

2.3.1.7 In specific circumstances where aggregated State pair data may be attributed to an identified aeroplane operator as a result of a very limited number of aeroplane operators conducting flights on a State pair, that aeroplane operator may request in writing to its State that such data not be published at State pair level, explaining the reasons why disclosure would harm their commercial interests. Based on this request, the State shall determine whether this data is confidential.

2.3.2 State reporting

2.3.2.1 The State shall calculate and inform each of the aeroplane operators that are attributed to it of their average total CO₂ emissions during the 2019 and 2020 period, in accordance with the timeline as defined in Appendix 1.

2.3.2.2 The State shall submit a report to ICAO in accordance with the timeline as defined in Appendix 1. This report shall contain the information as defined in Appendix 5, Tables A5-4, A5-5 and A5-6, when applicable.

2.3.2.3 The State shall inform ICAO of any reported data deemed confidential in accordance with 2.3.1.6 and 2.3.1.7.

2.3.2.4 All aeroplane operator data which is deemed confidential in accordance with 2.3.1.6 and 2.3.1.7 shall be aggregated without attribution to the specific aeroplane operator, and included within the ICAO document entitled, “CORSIA Central Registry (CCR): Information and Data for Transparency” that is available on the ICAO CORSIA website.

2.3.3 Reporting of sustainable aviation fuels

2.3.3.1 The aeroplane operator shall subtract sustainable aviation fuels traded or sold to a third party from its total reported quantity of sustainable aviation fuels.

2.3.3.2 The aeroplane operator shall provide a declaration of all other GHG schemes it participates in where the emissions reductions from the use of sustainable aviation fuels may be claimed, and a declaration that it has not made claims for the same batches of sustainable aviation fuel under these other schemes.

2.3.3.3 To claim emissions reductions from the use of sustainable aviation fuels in the Emissions Report, the aeroplane operator shall provide the information as described in Appendix 5 Table A5-2. The information provided is through to the blend point, and includes information received from both the neat (unblended) fuel producer and the fuel blender.

2.3.3.4 **Recommendation:** *The aeroplane operator should make sustainable aviation fuel claims on an annual basis in order to ensure all documentation is dealt with in a timely manner. However, the aeroplane operator has the option to decide when to make a sustainable aviation fuel claim within a given compliance period for all sustainable aviation fuel received by a blender within that compliance period. For blending that occurs in the second half of the final year of a compliance period, the aeroplane operator and the State to which it is attributed should determine what, if any, flexibility is needed in terms of submitting reports.*

2.3.3.5 If the aeroplane operator purchases fuel from a supplier downstream from the fuel blender (e.g., from a distributor, another aeroplane operator, or an aerodrome-based fuel distributor), this fuel supplier shall provide all of the requisite documentation in order for the emissions reductions from the use of sustainable aviation fuels to be claimed by the aeroplane operator in accordance with Chapter 3.

2.4 Verification of CO₂ emissions

2.4.1 Annual verification of an aeroplane operator's Emissions Report

2.4.1.1 The aeroplane operator shall engage a verification body for the verification of its annual Emissions Report.

2.4.1.2 **Recommendation.** - *The aeroplane operator should perform an internal pre-verification of its Emissions Report prior to the verification by a verification body.*

Note. – *Further guidance material on internal pre-verification is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).*

2.4.1.3 A verification body shall conduct the verification according to ISO 14064-3:2006¹, and the relevant requirements in Appendix 6 Section 3.

2.4.1.4 Following the verification of the Emissions Report by the verification body, the aeroplane operator and the verification body shall both independently submit a copy of the Emissions Report and associated Verification Report to the State to which the aeroplane operator is attributed, in accordance with the timeline as defined in Appendix 1.

2.4.1.5 The State shall perform an order of magnitude check of the Emissions Report in accordance with the timeline, as defined in Appendix 1.

Note. – *Further guidance material on the order of magnitude check is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).*

2.4.1.6 To facilitate order of magnitude checks and ensure the completeness of reported data, and where necessary to support the implementation of the requirements in this Volume, the State shall share, upon agreement with

¹ ISO 14064-3:2006 entitled “Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions.”

another State, specific data and information contained in the aeroplane operator's Emissions Report for aeroplane operators performing flights to and from the requesting State.

Note. – *Such data and information could include aeroplane operator's name, reporting year, number of international flights, as defined in 1.1.2, per aerodrome pair or State pair and aeroplane and emissions data.*

2.4.1.7 The State shall inform concerned aeroplane operators on the requests for data sharing. In the absence of an agreement between the two States, this information shall not be disclosed to third parties.

2.4.1.8 **Recommendation:** *The State should share, upon a justified request from another State, data on aeroplane operators which are attributed to it, where the request relates to the correct attribution of flights to aeroplane operators. This includes leased aeroplanes where there is a risk of incorrect attribution of flights due to the complexity of leasing and Parent/Subsidiary arrangements between aeroplane operators. In addition, States should support each other and provide flight information (e.g., from ATM systems), especially in cases where the flight is between two States which does not include the State to which the aeroplane operator is attributed. Such data includes origin and destination aerodromes, flight date and time, aircraft type.*

Note. – *As an example of leasing complexities, Operator A may lease its aeroplane to Operator B, with both Operators using the same aeroplane during the year but Operator B not operating to the State making the request for information. The State regulating Operator A may want to confirm that the leased aeroplane is identified in the Emissions Report from Operator B to be confident that Operator A has not under reported.*

2.4.1.9 The State shall provide the name of the verification body used to verify each Emissions Report upon a request for information disclosure.

2.4.1.10 **Recommendation:** *The State should inform concerned aeroplane operators of any request for information disclosure.*

2.4.2 Verification body and national accreditation body

2.4.2.1 A verification body shall be accredited to ISO 14065:2013² and the relevant requirements in Appendix 6 Section 2 by a national accreditation body, in order to be eligible to verify the Emissions Report of the aeroplane operator.

2.4.2.2 A national accreditation body shall be working in accordance with ISO/IEC 17011³.

2.4.3 Verification of sustainable aviation fuels

2.4.3.1 Fuel purchases, transaction reports, fuel blending records and sustainability credentials shall constitute the documentary proof for the purpose of verification and approval of emissions reductions from the use of sustainable aviation fuels.

2.4.3.2 The aeroplane operator shall ensure that it, or its designated representative, has audit rights of the production records for the sustainable aviation fuels that it purchases.

2.4.3.3 **Recommendation:** *When an audit provision is triggered, and an audit of the fuel producer is undertaken, the aeroplane operator should share the results of the audit with the fuel producer so that the producer may then make it available to other aeroplane operators seeking assurance on the fuel producer's internal processes for the purpose of this Volume.*

² ISO 14065:2013 entitled "Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition, Document published on: 2013-04."

³ ISO/IEC 17011:2004 entitled "Conformity assessment - General requirements for accreditation bodies accrediting conformity assessment bodies".

Note. – The quality control assurances of sustainable aviation 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 sustainable aviation 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 States may elect to independently audit the production records of the sustainable aviation fuel producer in order to provide further assurance.

2.4.3.4 Recommendation: *In order to ensure this capability exists, sustainable aviation fuel procurement controls should seek to enable audit rights for fuel purchasers, aeroplane operators, or their designated representatives.*

2.5 Data gaps

Note 1. – Gaps in emissions-related data can occur due to various reasons; including irregular operations, data feed issues or critical system failures. When these 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 the State in its review of the verified Emissions Report.

Note 2. – Guidance material on data gaps is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

2.5.1 Aeroplane operator

2.5.1.1 The aeroplane operator using a Fuel Use Monitoring Method, as described in Appendix 2, shall fill data gaps using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), as described in Appendix 3, provided that the data gaps during a compliance period do not exceed the following thresholds:

- a) 2019-2020 period: 5 per cent of international flights, as defined in 1.1.2 and 2.1;
- b) 2021-2035 period: 5 per cent of international flights subject to offsetting requirements, as defined in 1.1.2 and 3.1.

2.5.1.2 The aeroplane operator shall correct issues identified with the data and information management system in a timely manner to mitigate ongoing data gaps and system weaknesses.

2.5.1.3 If the aeroplane operator realizes it has data gaps and system weaknesses that exceed the threshold in 2.5.1.1, then it shall engage with the State to take remedial action to address this.

2.5.1.4 When the threshold is exceeded, the aeroplane operator shall state the percentage of international flights, as defined in 1.1.2 and 2.1 for the 2019-2020 period, or flights subject to offsetting requirements, as defined in 3.1 for the 2021-2035 Period, that had data gaps, and provide an explanation to the State to which it is attributed in their annual Emissions Report.

2.5.1.5 The aeroplane operator shall fill all data gaps and correct systematic errors and misstatements prior to the submission of the Emissions Report.

2.5.2 State

2.5.2.1 If the aeroplane operator does not provide its annual Emissions Report in accordance with the timeline as defined in Appendix 1, then the State to which it is attributed shall engage with the aeroplane operator to obtain the necessary information. If this proves unsuccessful, then the State shall estimate the aeroplane 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 Appendix 3.

2.5.2.2 If the State does not provide its annual aggregated Emissions Report to ICAO in accordance with the timeline as defined in Appendix 1, then the data provided by ICAO shall 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 Chapter 3.

2.6 Error correction to Emissions Reports

2.6.1 If an error in the aeroplane operator's reported emissions is identified by the State, the verification body, or the aeroplane operator after the reported CO₂ emissions have been submitted to ICAO in accordance with the timeline as defined in Appendix 1, the State shall update the reported CO₂ emissions to address the error. The State shall assess any implications with respect to the aeroplane 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.

2.6.2 The State shall report an error in the aeroplane operator's CO₂ emissions to ICAO.

Note. – No adjustments will be made to the total sectoral CO₂ emissions or the Sector's Growth Factor (SGF), as defined in Chapter 3, as a result of error correction to Emissions Reports.

CHAPTER 3. — CO₂ OFFSETTING REQUIREMENTS FROM INTERNATIONAL FLIGHTS AND EMISSIONS REDUCTIONS FROM THE USE OF SUSTAINABLE AVIATION FUELS

3.1 Applicability of CO₂ offsetting requirements

3.1.1 From 1 January 2021 to 31 December 2035, the offsetting requirements of this Chapter shall be applicable to an aeroplane operator with international flights, as defined in 1.1.2 and 2.1, between States as defined in the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” that is available on the ICAO CORSIA website.

3.1.2 The Standards of this Chapter shall not be applicable to a new entrant aeroplane operator for three years starting in the year when it meets the requirements in 2.1.1 and 2.1.3, or until its annual CO₂ emissions exceed 0.1 per cent of total CO₂ emissions from international flights, as defined in 1.1.2 and 2.1, in 2020, whichever occurs earlier. The Standards of this Chapter shall then be applicable in the subsequent year. The State shall use the information on the total CO₂ emissions in 2020 from the ICAO document entitled “CORSIA 2020 Emissions” that is available on the ICAO CORSIA website. This information will be produced in accordance with the timeline described in Appendix 1.

3.1.3 The State shall notify ICAO of their decision to voluntarily participate, or to discontinue the voluntary participation, in the applicability of Chapter 3 according to the timeline described in Appendix 1.

Note. – The ICAO document entitled “CORSIA States for Chapter 3 State Pairs” that is available on the ICAO CORSIA website includes:

- a) *States that have volunteered to participate during the compliance periods from 1 January 2021 to 31 December 2026;*
- b) *States, with the exception of Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs), which meet the following criteria during the compliance periods from 1 January 2027 to 31 December 2035:*
 - (i) *an individual share of international aviation activities in RTKs in the 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 in the year 2018.*
- c) *States which are not within the applicability scope of (b), but which have volunteered to participate.*

This document is updated on annual basis according to the timeline as defined in Appendix 1.

3.1.4 The State shall calculate the annual aeroplane operator’s final CO₂ offsetting requirements based on the data reported in accordance with Chapter 2, the applicability requirements in 3.1, and the application of 3.2, 3.3 and 3.4 where applicable.

3.2 CO₂ offsetting requirements

3.2.1 The State shall calculate, for each of the aeroplane operators attributed to it, the amount of CO₂ emissions required to be offset in a given year from 1 January 2021 to 31 December 2023 prior to consideration of the sustainable aviation fuels, as follows:

$$OR_y = OE * SGF_y$$

where:

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

OE = Aeroplane operator's CO₂ emissions covered by 3.1 in the given year y or aeroplane operator's CO₂ emissions covered by 3.1 in 2020, depending upon the option selected by the State which will be applied to all aeroplane operators that have been attributed to it; and

SGF_y = Sector's Growth Factor.

Note 1. – The Sector's Growth Factor applicable for a given year (SGF_y) is provided in the ICAO document entitled "CORSA Annual Sector's Growth Factor (SGF)" that is available from the ICAO CORSA website, and is calculated as $\frac{(SE_y - SE_{B,y})}{SE_y}$, where SE_y = Total sectoral CO₂ emissions covered by 3.1 in the given year y and SE_{B,y} = Average of total sectoral CO₂ emissions during 2019 and 2020 covered by 3.1 in the given year y.

Note 2. – Sectoral emissions in a given year (SE_y) do not include the CO₂ emissions from new entrants during their exception period, as defined in 3.1.2.

Note 3. – As the States which form the "CORSA States for Chapter 3 State Pairs", as defined by 3.1, change over time, the average of total sectoral CO₂ emissions during 2019 and 2020 covered by these State pairs in the given year y (SE_{B,y}) will be recalculated.

3.2.2 The State shall calculate, for each of the aeroplane operators attributed to it, 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 sustainable aviation fuels, every year as follows:

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

where:

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

OE_y = Aeroplane operator's CO₂ emissions covered by 3.1 in the given year y;

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

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

SGF_y = Sector's Growth Factor; and

OGF_y = Aeroplane operator's Growth Factor.

Table 3.1 – Overview of CO₂ offsetting requirements on a sectoral and individual basis

<i>Year of applicability</i>	<i>%S_y</i>	<i>%O_y</i>
1 January 2024 to 31 December 2029	100%	0%
1 January 2030 to 31 December 2032	(100% - %O _y)	A specified percentage of at least 20%
1 January 2033 to 31 December 2035	(100% - %O _y)	A specified percentage of at least 70%

Note. – The specified percentage (i.e., %O_y) will be determined by the ICAO Assembly in 2028.

3.2.3 The State shall 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 1.

3.2.4 The State shall calculate, when applicable, the aeroplane operator's Growth Factor for a given year (OGF_y) in accordance with the CO₂ emissions from the verified Emissions Reports submitted by aeroplane operators attributed to it.

Note. – The aeroplane operator’s Growth Factor (OGF_y) is calculated as $\frac{(OE_y - OE_{B,y})}{OE_y}$, where OE_y = Total aeroplane operator’s CO_2 emissions covered by 3.1 in the given year y and $OE_{B,y}$ = Average of total aeroplane operator’s CO_2 emissions during 2019 and 2020 covered by 3.1 in the given year y .

3.2.5 The State shall, upon calculating the offsetting requirements in a given year (OR_y) of each of the aeroplane operators attributed to it, inform the aeroplane operator of its offsetting requirements according to the timeline as defined in Appendix 1.

3.3 Emissions reductions from the use of sustainable aviation fuels

3.3.1 The aeroplane operator that intends to claim for emissions reductions from the use of sustainable aviation fuels in a given year shall compute emissions reductions as follow;

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

where:

ER_y = Emissions reductions from the use of sustainable aviation fuels in the given year y (in tonnes);

FCF = Fuel conversion factor, equal to 3.16 kg CO_2 /kg fuel for Jet-A fuel and 3.10 kg CO_2 /kg fuel or AvGas or Jet-B fuel;

$MS_{f,y}$ = Total mass of a neat sustainable aviation fuel claimed in the given year y (in tonnes), as described and reported in Field 12.b in Table A5-1 from Appendix 5;

LS_f = Life cycle emissions value for a sustainable aviation fuel (in gCO_2e/MJ); and

LC = Life cycle emissions values for a conventional aviation fuel, equal to 89 gCO_2e/MJ for jet fuel and equal to 95 gCO_2e/MJ for AvGas.

Note 1. – The ratio $\left(1 - \frac{LS_f}{LC} \right)$ is also referred to as the emissions reduction factor (ERF_f) of a sustainable aviation fuel.

Note 2. – For each of the sustainable aviation fuels claimed, the total mass of the neat sustainable aviation 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 sustainable aviation fuels.

3.3.2 If a Default Life Cycle Emissions value is used, then the aeroplane operator shall use the ICAO document entitled “CORSIA Default Life Cycle Emissions Values for Sustainable Aviation Fuels” that is available on the ICAO CORSIA website for the calculation in 3.3.1.

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

3.4 CO₂ offsetting requirements with emissions reductions from the use of sustainable aviation fuels

3.4.1 The amount of CO₂ emissions required to be offset by the aeroplane operator, after taking into account emissions reductions from the use of sustainable aviation fuels in a given year from 1 January 2021 to 31 December 2035, shall be calculated by the State 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 = Aeroplane operator's final offsetting requirements in the given compliance period c ,

$OR_{y,c}$ = Aeroplane operator's offsetting requirements in the given year y of the compliance period c ,

$ER_{y,c}$ = Emissions reductions from the use of sustainable aviation fuels in the given year y of the compliance period c .

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

3.4.3 The aeroplane operator's total final offsetting requirements during a compliance period (i.e., FOR_c) shall be rounded up to the nearest tonne of CO₂.

3.4.4 The State shall, upon calculating the final offsetting requirements for a given compliance period of each of the aeroplane operators attributed to it, inform the aeroplane operator of its final offsetting requirements according to the timeline as defined in Appendix 1.

Note. – Information on CORSIA Eligible Emissions Units, which can be used to meet CO₂ offsetting requirements, are contained in Chapter 4.

CHAPTER 4. — EMISSIONS UNITS

4.1 Applicability of emissions units

The Standards and Recommended Practices of this Chapter shall be applicable to an aeroplane operator who is subject to offsetting requirements in Chapter 3.

Note.— See also Chapter 1 and Appendix 1 for administration procedures relevant to Chapter 4.

4.2 Cancelling CORSIA Eligible Emissions Units

4.2.1 The aeroplane operator shall meet its offsetting requirements according to 3.4.4, as calculated by the State to which it is attributed, by cancelling CORSIA Eligible Emissions Units in a quantity equal to the sum of its final offsetting requirements for a given compliance period (i.e., FOR_c). 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.

Note. — The CORSIA Eligible Emissions Units are determined by the Council, upon recommendation of a technical advisory body established by the Council, and meet the CORSIA Emissions Unit Eligibility Criteria. The CORSIA Emissions Unit Eligibility Criteria are approved and may only be amended by the Council, with the technical contribution of CAEP, taking into account relevant developments in the UNFCCC and the Paris Agreement. The emissions units generated from mechanisms established under the UNFCCC and the Paris Agreement are eligible for use in CORSIA, provided that they align with decisions by the Council with the technical contribution of CAEP, including on avoiding double counting and on eligible vintage and timeframe.

4.2.2 To fulfil the provisions in 4.2.1, the aeroplane operator shall;

- a) 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 1; and
- b) request each CORSIA Eligible Emissions Unit Program registry to make visible on the registry’s public website, information on each of the aeroplane operator’s cancelled CORSIA Eligible Emissions Units for a given compliance period, as defined in Appendix 1. Such information for each cancelled CORSIA Eligible Emissions Unit shall include the consolidated identifying information in Field 5 of Table A5-7, except fields 5.j, 5.k and 5.m.

Note. — “Cancel” means the permanent removal and single use of an 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”.

4.3 Reporting emissions unit cancellation

4.3.1 The aeroplane operator shall report to the State to which it is attributed, the cancellation of CORSIA Eligible Emissions Units carried out in accordance with 4.2 to meet its final offsetting requirements for a given compliance period, by submitting to the State a copy of the verified Emissions Unit Cancellation Report for approval and a copy of the associated Verification Report. The Emissions Unit Cancellation Report shall contain information using the required fields defined in Appendix 5 Table A5-7 and shall be submitted to the State according to the timeline as defined in Appendix 1.

4.3.2 The State shall report to ICAO in accordance with the timeline as defined in Appendix 1. This report shall contain the information as defined in Appendix 5 Table A5-8, using an ICAO approved form.

4.3.3 **Recommendation:** *The State should publish the following information, once submitted to ICAO, for a given compliance period:*

- a) *Total final offsetting requirements over the compliance period for each aeroplane operators attributed to the State; and*
- b) *Total quantity of emissions units cancelled over the compliance period by each aeroplane operator to reconcile the total final offsetting requirements, as reported by each aeroplane operator attributed to the State.*

4.4 Verification of Emissions Unit Cancellation Report

4.4.1 Verification of an Aeroplane Operator's Emission Unit Cancellation Report

4.4.1.1 The aeroplane operator shall engage a verification body for the verification of its Emissions Unit Cancellation Report.

Note. — The aeroplane 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.

4.4.1.2 A verification body shall conduct the verification according to ISO 14064-3:2006⁴, and the relevant requirements in Appendix 6 Section 3.

4.4.1.3 If required by the verification body, the aeroplane operator shall provide access to relevant information on the cancellation of emissions units.

4.4.1.4 Following the verification of the Emissions Unit Cancellation Report by the verification body, the aeroplane operator and the verification body shall both independently submit a copy of the Emissions Unit Cancellation Report and associated Verification Report to the State to which the aeroplane operator is attributed in accordance with the timeline in Appendix 1.

4.4.1.5 The State shall perform an order of magnitude check of the Emissions Unit Cancellation Report in accordance with the timeline, as defined in Appendix 1.

Note. — Further guidance material on the Verification of Emissions Unit Cancellation Report is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

4.4.2 Verification body and national accreditation body

4.4.2.1 A verification body shall be accredited to ISO 14065:2013⁵ and the relevant requirements in Appendix 6 Section 2 by a national accreditation body, in order to be eligible to verify the Emissions Unit Cancellation Report of an aeroplane operator.

4.4.2.2 A national accreditation body shall be working in accordance with ISO/IEC 17011:2004⁶.

⁴ ISO 14064-3:2006 entitled "Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions."

⁵ ISO 14065:2013 entitled "Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition, Document published on: 2013-04."

⁶ ISO/IEC 17011:2004 entitled "Conformity assessment - General requirements for accreditation bodies accrediting conformity assessment bodies".

APPENDIX 1. ADMINISTRATION PROCEDURES

1. INTRODUCTION

The procedures specified in this Appendix summarise administrative roles and responsibilities of the stakeholders involved in implementing Part II of this Volume. Section 2 provides a list of activities, and the associated date by which the activities shall be completed.

2. COMPLIANCE PERIODS AND TIMELINE

Note. – Further information and guidance on timeline prior to 1 January 2019, is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).

2.1 2019-2020 period

During the period of 2019-2020, aeroplane operators and States shall comply with the requirements according to the following timeline, where applicable;

Table A1-1. Details of compliance timeline for 2019-2020 period

<i>Timeline</i>	<i>Activity</i>
1 January 2019 to 31 December 2019	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2, CO ₂ emissions for 2019 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
28 February 2019	The aeroplane operator shall submit Emissions Monitoring Plan to State (only once, unless there is a need to review) in accordance with Part II, Chapter 2, 2.2.2.1.
30 April 2019	The State shall approve Emissions Monitoring Plans (only once, unless there is a review) in accordance with Part II, Chapter 2, 2.2.2.1.
30 April 2019	The State shall submit a list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as a list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 May 2019	Recommendation: <i>The State should obtain and use the ICAO document entitled "CORSA Aeroplane Operator to State Attributions" summarising a list of aeroplane 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 CORSA website.</i>
1 January 2020 to 31 December 2020	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2, CO ₂ emissions for 2020 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2020 to 31 May 2020	The aeroplane operator shall compile 2019 CO ₂ emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The Aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
31 May 2020	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2019 to the State in accordance with Part II, Chapter 2, 2.4.1.4.

1 June 2020 to 31 August 2020	The State shall conduct an order of magnitude check of the verified Emissions Report for 2019 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2020	The State shall notify ICAO of its decision to voluntarily participate, or to discontinue the voluntary participation in the applicability of Part II, Chapter 3 from 1 January 2021 in accordance with Part II, Chapter 3, 3.1.3. The State shall also notify ICAO which option it has selected for calculating the aeroplane operator's CO ₂ emissions during the 2021-2023 period in accordance with Part II, Chapter 3, 3.2.1.
1 August 2020	The State shall obtain and use the ICAO document entitled "CORSIA States for Chapter 3 State Pairs" applicable for the 2021 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 August 2020	The State shall submit required information regarding CO ₂ emissions for 2019 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
30 November 2020	The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2020	Recommendation: <i>The State should obtain and use the ICAO document entitled "CORSIA Aeroplane Operator to State Attributions" summarising a list of aeroplane 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 CORSIA website.</i>

Note. — The time for verification of the aeroplane operator's Emissions Report is longer during the 2019-2020 period than subsequent Periods.

2.2 2021-2023 period

During the period of 2021-2023, aeroplane operators and States shall comply with the requirements according to the following timeline, where applicable;

Table A1-2. Details of compliance timeline for 2021-2023 period

Timeline	Activity
1 January 2021 to 31 December 2021	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2, CO ₂ emissions for 2021 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2021 to 31 May 2021	The aeroplane operator shall compile 2020 CO ₂ emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The Aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
31 May 2021	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2020 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 June 2021 to 31 August 2021	The State shall conduct an order of magnitude check of the verified Emissions Report for 2020 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2021	The State shall 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 2022 in accordance with Part II, Chapter 3, 3.1.3.
1 August 2021	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2022 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 August 2021	The State shall submit required information regarding CO ₂ emissions for 2020 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
30 September 2021	The State shall calculate and inform aeroplane operators attributed to it of their average total CO ₂ emissions during 2019 and 2020, in accordance with Part II, Chapter 2, 2.3.2.1.
30 November 2021	The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2021	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2022 to 31 December 2022	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2022 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2022 to 30 April 2022	The aeroplane operator shall compile 2021 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2022	The aeroplane operator and the verification body shall both submit the Verified Emissions Report and associated Verification Report for 2021 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2022 to 31 July 2022	The State shall conduct an order of magnitude check of the verified Emissions Report for 2021 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2022	The State shall 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 2023 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2022	The State shall submit required information regarding CO ₂ emissions for 2021 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2022	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2023 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2022	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2021 from the document “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” that can be found on the ICAO CORSIA website in accordance with Part II, Chapter 3, 3.2.1.
30 November 2022	The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7. The State shall calculate and inform aeroplane operators of offsetting requirements for 2021 in accordance with Part II, Chapter 3, 3.2, and based on a chosen formula

	in accordance with Part II, Chapter 3, 3.1.
31 December 2022	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2023 to 31 December 2023	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2, CO ₂ emissions for 2023 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2023 to 30 April 2023	The aeroplane operator shall compile 2022 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2023	The aeroplane operator and the verification body shall both submit the Verified Emissions Report and associated Verification Report for 2022 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2023 to 31 July 2023	The State shall conduct an order of magnitude check of the verified Emissions Report for 2022 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2023	The State shall 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 2024 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2023	The State shall submit required information regarding CO ₂ emissions for 2022 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2023	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2024 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2023	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2022 from the ICAO document entitled “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” that is available on the ICAO CORSIA website in accordance with Part II, Chapter 3, 3.2.1.
30 November 2023	The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7. The State shall calculate and inform aeroplane operators of offsetting requirements for 2022 in accordance with Part II, Chapter 3, 3.2, and based on a chosen formula in accordance with Part II, Chapter 3, 3.1.
31 December 2023	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>

Note 1. — The time for verification of the aeroplane operator’s Emissions Report is shorter during the 2021-2023 period than the 2019-2020 period.

Note 2. – During the 2021-2023 period, States may determine the basis of the aeroplane operator offsetting requirements in accordance with Part II, Chapter 3, 3.2.1.

2.3 2024-2026 period

During the period of 2024-2026, aeroplane operators and States shall comply with the requirements according to the following timeline, where applicable;

Table A1-3. Details of compliance timeline for 2024-2026 period

<i>Timeline</i>	<i>Activity</i>
1 January 2024 to 31 December 2024	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2, CO ₂ emissions for 2024 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2024 to 30 April 2024	The aeroplane operator shall compile 2023 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. <i>Recommendation: The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2024	The aeroplane operator and the verification body shall both submit the Verified Emissions Report and associated Verification Report for 2023 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2024 to 31 July 2024	The State shall conduct an order of magnitude check of the verified Emissions Report for 2023 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2024	The State shall 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 2025 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2024	The State shall submit required information regarding CO ₂ emissions for 2023 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2024	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2025 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2024	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2023 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.1.
30 November 2024	The State shall calculate and inform aeroplane operators of offsetting requirements for 2023 in accordance with Part II, Chapter 3, 3.2, and based on a chosen formula in accordance with Part II, Chapter 3, 3.1. The State shall calculate and inform aeroplane operators of their final offsetting requirements for the 2021 to 2023 Period in accordance with Part II, Chapter 3, 3.4.4. The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2024	<i>Recommendation: The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2025 to 31 December 2025	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2

	CO ₂ emissions for 2025 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
31 January 2025 or 60 days after the State informs aeroplane operators of their final offsetting requirements for the 2021-2023 period	The aeroplane operator shall cancel emissions units for compliance during the 2021 to 2023 period in accordance with Part II, Chapter 4, 4.2.
7 February 2025	The aeroplane operator shall request that their cancellation of Eligible Emissions Units for the 2021-2023 period is communicated on the respective Eligible Emission Units Program registry (or registries) public website(s) in accordance with Part II, Chapter 4, 4.2.2 c).
1 December 2024 to 30 April 2025	The aeroplane operator shall compile their Emissions Unit Cancellation Report covering the 2021-2023 period to be verified by a verification body, in accordance with Part II, Chapter 4, 4.4.
1 January 2025 to 30 April 2025	The aeroplane operator shall compile 2024 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4.
	Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2025	The aeroplane operator and the verification body shall both submit the Verified Emissions Report and associated Verification Report for 2024 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
	The aeroplane operator and the verification body shall submit the verified Emissions Unit Cancellation Report and associated Verification Report for the 2021-2023 period to the State in accordance with Part II, Chapter 4, 4.4.1.4.
1 May 2025 to 31 July 2025	The State shall conduct an order of magnitude check of the verified Emissions Report for 2024 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
	The State shall undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2021-2023 period in accordance with Part II, Chapter 4, 4.4.1.5.
30 June 2025	The State shall 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 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2025	The State shall submit required information regarding CO ₂ emissions for 2024 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
	The State shall report to ICAO the required information regarding emissions unit cancellation for the 2021-2023 period in accordance with Part II, Chapter 4, 4.3.2.
1 August 2025	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2026 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2025	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2024 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2025	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2024, in accordance with Part II, Chapter 3, 3.2.
	The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2025	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of</i>

	<i>aeroplane 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 CORSIA website.</i>
1 January 2026 to 31 December 2026	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2026 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2026 to 30 April 2026	The aeroplane operator shall compile 2025 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2026	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2025 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2026 to 31 July 2026	The State shall conduct an order of magnitude check of the verified Emissions Report for 2025 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2026	The State shall 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 2027 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2026	The State shall submit required information regarding CO ₂ emissions for 2025 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2026	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2027 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2026	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2025 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2026	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2025, in accordance with Part II, Chapter 3, 3.2. The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2026	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>

2.4 2027-2029 period

During the period of 2027-2029, aeroplane operators and States shall comply with the requirements according to the following timeline, where applicable;

Table A1-4. Details of compliance timeline for 2027-2029 period

<i>Timeline</i>	<i>Activity</i>
1 January 2027 to 31 December 2027	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2

	CO ₂ emissions for 2027 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2027 to 30 April 2027	The aeroplane operator shall compile 2026 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2027	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2026 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2027 to 31 July 2027	The State shall conduct an order of magnitude check of the verified Emissions Report for 2026 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2027	The State shall 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 2028 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2027	The State shall submit required information regarding CO ₂ emissions for 2026 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2027	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2028 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2027	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2026 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2027	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2026, in accordance with Part II, Chapter 3, 3.2. The State shall calculate and inform aeroplane operators of their final offsetting requirements for the 2024 to 2026 Period, in accordance with Part II, Chapter 3, 3.4.4. The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2027	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2028 to 31 December 2028	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2 2.2, CO ₂ emissions for 2028 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
31 January 2028 or 60 days after the State informs aeroplane operators of their final offsetting requirements for the 2024-2026 period	The aeroplane operator shall cancel emissions units for compliance during the 2024 to 2026 Period in accordance with Part II, Chapter 4, 4.2.
7 February 2028	The aeroplane operator shall request that their cancellation of Eligible Emissions Units for the 2024-2026 period is communicated on the respective Eligible Emission Units Program registry (or registries) public website(s) in accordance with Part II, Chapter 4, 4.2.2 c).
1 December 2027 to 30 April 2028	The aeroplane operator shall compile their Emissions Unit Cancellation Report

	covering the 2024-2026 period to be verified by a verification body, in accordance with Part II, Chapter 4, 4.4.
1 January 2028 to 30 April 2028	<p>The aeroplane operator shall compile 2027 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4.</p> <p>Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i></p>
30 April 2028	<p>The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2027 to the State in accordance with Part II, Chapter 2, 2.4.1.4.</p> <p>The aeroplane operator and the verification body shall submit the verified Emissions Unit Cancellation Report and associated Verification Report for the 2024-2026 compliance period to the State in accordance with Part II, Chapter 4, 4.4.1.4.</p>
1 May 2028 to 31 July 2028	<p>The State shall conduct an order of magnitude check of the verified Emissions Report for 2027 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.</p> <p>The State shall undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2024-2026 period in accordance with Part II, Chapter 4, 4.4.1.5.</p>
30 June 2028	The State shall 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 2028 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2028	<p>The State shall submit required information regarding CO₂ emissions for 2027 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.</p> <p>The State shall report to ICAO the required information regarding emissions unit cancellation for the 2024-2026 period in accordance with Part II, Chapter 4, 4.3.2.</p>
1 August 2028	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2029 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2028	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2027 from the ICAO document entitled: “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2028	<p>The State shall calculate and inform aeroplane operators of their offsetting requirements for 2027, in accordance with Part II, Chapter 3, 3.2.</p> <p>The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.</p>
31 December 2028	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2029 to 31 December 2029	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2029 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2029 to 30 April 2029	<p>The aeroplane operator shall compile 2028 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4.</p> <p>Recommendation: <i>The aeroplane operator should submit their Emissions Report</i></p>

	<i>for verification as soon as possible after completing their Emissions Report.</i>
30 April 2029	The aeroplane operator and the verification body shall both submit the Verified Emissions Report and associated Verification Report for 2028 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2029 to 31 July 2029	The State shall conduct an order of magnitude check of the verified Emissions Report for 2028 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2029	The State shall 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 2030 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2029	The State shall submit required information regarding CO ₂ emissions for 2028 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2029	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2030 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2029	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2028 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2029	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2028, in accordance with Part II, Chapter 3, 3.2. The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2029	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>

2.5 2030-2032 period

During the period of 2030-2032, aeroplane operators and States shall comply with the requirements according to the following timeline, where applicable;

Table A1-5. Details of compliance timeline for 2030-2032 period

<i>Timeline</i>	<i>Activity</i>
1 January 2030 to 31 December 2030	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2030 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2030 to 30 April 2030	The aeroplane operator shall compile 2029 CO ₂ emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2030	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2029 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2030 to 31 July 2030	The State shall conduct an order of magnitude check of the verified Emissions

	Report for 2029 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2030	The State shall 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 2031 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2030	The State shall submit required information regarding CO ₂ emissions for 2029 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2030	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2031 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2030	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2029 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2030	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2029, in accordance with Part II, Chapter 3, 3.2. The State shall calculate and inform aeroplane operators of their final offsetting requirements for the 2027 to 2029 Period, in accordance with Part II, Chapter 3, 3.4.4. The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2030	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2031 to 31 December 2031	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2031 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
31 January 2031 or 60 days after the State informs aeroplane operators of their final offsetting requirements for the 2027-2029 period	The aeroplane operator shall cancel emissions units for compliance during the 2027 to 2029 Period in accordance with Part II, Chapter 4, 4.2.
7 February 2031	The aeroplane operator shall request that their cancellation of Eligible Emissions Units for the 2027-2029 period is communicated on the respective Eligible Emission Units Program registry (or registries) public website(s) in accordance with Part II, Chapter 4, 4.2.2 c).
1 December 2030 to 30 April 2031	The aeroplane operator shall compile their Emissions Unit Cancellation Report covering the 2027-2029 period to be verified by a verification body, in accordance with Part II, Chapter 4, 4.4.
1 January 2031 to 30 April 2031	The aeroplane operator shall compile 2030 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2031	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2030 to the State in accordance with Part II, Chapter 2, 2.4.1.4. The aeroplane operator and the verification body shall submit the verified

	Emissions Unit Cancellation Report and associated Verification Report for the 2027-2029 period to the State in accordance with Part II, Chapter 4, 4.4.1.4.
1 May 2031 to 31 July 2031	The State shall conduct an order of magnitude check of the verified Emissions Report for 2030 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2. The State shall undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2027-2029 period in accordance with Part II, Chapter 4, 4.4.1.5.
30 June 2031	The State shall 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 2032 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2031	The State shall submit required information regarding CO ₂ emissions for 2030 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1. The State shall report to ICAO the required information regarding emissions unit cancellation for the 2027-2029 period in accordance with Part II, Chapter 4, 4.3.2.
1 August 2031	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2032 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2031	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2030 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2031	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2030, in accordance with Part II, Chapter 3, 3.2. The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2031	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2032 to 31 December 2032	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2032 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2032 to 30 April 2032	The aeroplane operator shall compile 2031 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2032	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2031 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2032 to 31 July 2032	The State shall conduct an order of magnitude check of the verified Emissions Report for 2031 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2032	The State shall 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 2033 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2032	The State shall submit required information regarding CO ₂ emissions for 2031 to

	ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2032	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2033 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2032	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2031 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2032	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2031, in accordance with Part II, Chapter 3, 3.2.
	The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
31 December 2032	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>

2.6 2033-2035 period

2.6.1 During the period of 2033-2035, aeroplane operators and States shall comply with the requirements according to the following timeline, where applicable;

Table A1-6. Details of compliance timeline for 2033-2035 period

<i>Timeline</i>	<i>Activity</i>
1 January 2033 to 31 December 2033	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2033 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2033 to 30 April 2033	The aeroplane operator shall compile 2032 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4.
	Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2033	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2032 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2033 to 31 July 2033	The State shall conduct an order of magnitude check of the verified Emissions Report for 2032 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
30 June 2033	The State shall 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 in accordance with Part II, Chapter 3, 3.1.3.
31 July 2033	The State shall submit required information regarding CO ₂ emissions for 2032 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
1 August 2033	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2034 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2033	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2032 from the

	ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2033	<p>The State shall calculate and inform aeroplane operators of their offsetting requirements for 2032, in accordance with Part II, Chapter 3, 3.2.</p> <p>The State shall calculate and inform aeroplane operators of their final offsetting requirements for the 2030 to 2032 Period, in accordance with Part II, Chapter 3, 3.4.4.</p> <p>State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.</p>
31 December 2033	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2034 to 31 December 2034	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2034 from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
31 January 2034 or 60 days after the State informs aeroplane operators of their final offsetting requirements for the 2030-2032 period	The aeroplane operator shall cancel emissions units for compliance during the 2030 to 2032 Period in accordance with Part II, Chapter 4, 4.2.
7 February 2034	The aeroplane operator shall request that their cancellation of Eligible Emissions Units for the 2030-2032 period is communicated on the respective Eligible Emission Units Program registry (or registries) public website(s) in accordance with Part II, Chapter 4, 4.2.2 c).
1 December 2031 to 30 April 2034	The aeroplane operator shall compile their Emissions Unit Cancellation Report covering the 2030-2032 period to be verified by a verification body, in accordance with Part II, Chapter 4, 4.4.
1 January 2034 to 30 April 2034	<p>The aeroplane operator shall compile 2033 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4.</p> <p>Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i></p>
30 April 2034	<p>The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2033 to the State in accordance with Part II, Chapter 2, 2.4.1.4.</p> <p>The aeroplane operator and the verification body shall submit the verified Emissions Unit Cancellation Report and associated Verification Report for the 2030-2032 compliance period to the State in accordance with Part II, Chapter 4, 4.4.1.4.</p>
1 May 2034 to 31 July 2034	<p>The State shall conduct an order of magnitude check of the verified Emissions Report for 2033 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.</p> <p>The State shall undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2030-2032 period in accordance with Part II, Chapter 4, 4.4.1.5.</p>
30 June 2034	The State shall 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 2035 in accordance with Part II, Chapter 3, 3.1.3.

31 July 2034	The State shall submit required information regarding CO ₂ emissions for 2033 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1. The State shall report to ICAO the required information regarding emissions unit cancellation for the 2030-2032 period in accordance with Part II, Chapter 4, 4.3.2.
1 August 2034	The State shall obtain and use the ICAO document entitled “CORSIA States for Chapter 3 State Pairs” applicable for the 2035 compliance year in accordance with Part II, Chapter 3, 3.1.1.
31 October 2034	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2033 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2034	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2033, in accordance with Part II, Chapter 3, 3.2. The State shall submit updates to the list of aeroplane operators that are attributed to it to ICAO in accordance with Part II, Chapter 1, 1.2.7, as well as updates to the list of verification bodies accredited in the State in accordance with Part II, Chapter 1, 1.3.7.
1 December 2034	Recommendation: <i>The State should obtain and use the ICAO document entitled “CORSIA Aeroplane Operator to State Attributions” summarising a list of aeroplane 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 CORSIA website.</i>
1 January 2035 to 31 December 2035	The aeroplane operator shall monitor, in accordance with Part II, Chapter 2, 2.2 CO ₂ emissions for 2035 for international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1.
1 January 2035 to 30 April 2035	The aeroplane operator shall compile 2034 emissions data to be verified by a verification body, in accordance with Part II, Chapter 2, 2.4. Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i>
30 April 2035	The aeroplane operator and the verification body shall both submit the verified Emissions Report and associated Verification Report for 2034 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2035 to 31 July 2035	The State shall conduct an order of magnitude check of the verified Emissions Report for 2034 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
31 July 2035	The State shall submit required information regarding CO ₂ emissions for 2034 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
31 October 2035	The State shall obtain and use the Sector’s Growth Factor (SGF) for 2034 from the ICAO document entitled; “CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA” in accordance with Part II, Chapter 3, 3.2.2.
30 November 2035	The State shall calculate and inform aeroplane operators of their offsetting requirements for 2034, in accordance with Part II, Chapter 3, 3.2.

2.6.2 To complete the period of 2033-2035, aeroplane operators and States shall comply with the requirements according to the following timeline, where applicable:

Timeline	Activity
1 January 2036 to 30 April 2036	The aeroplane operator shall compile 2035 emissions data to be verified by a

	<p>verification body, in accordance with Part II, Chapter 2, 2.4.</p> <p>Recommendation: <i>The aeroplane operator should submit their Emissions Report for verification as soon as possible after completing their Emissions Report.</i></p>
30 April 2036	The aeroplane operator and the verification body shall both submit the Verified Emissions Report and associated Verification Report for 2035 to the State in accordance with Part II, Chapter 2, 2.4.1.4.
1 May 2036 to 31 July 2036	The State shall conduct an order of magnitude check of the verified Emissions Report for 2035 in accordance with Part II, Chapter 2, 2.4.1.5, including any filling in of data gaps in case of non-reporting by aeroplane operators in accordance with Part II, Chapter 2, 2.5.2.
31 July 2036	The State shall submit required information regarding CO ₂ emissions for 2035 to ICAO in accordance with Part II, Chapter 2, 2.3.2.1.
31 October 2036	The State shall obtain and use the Sector's Growth Factor (SGF) for 2035 from the ICAO document entitled; "CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA" in accordance with Part II, Chapter 3, 3.2.2.
30 November 2036	<p>The State shall calculate and inform aeroplane operators of their offsetting requirements for 2035, in accordance with Part II, Chapter 3, 3.2.</p> <p>The State shall calculate and inform aeroplane operators of their final offsetting requirements for the 2033 to 2035 Period, in accordance with Part II, Chapter 3, 3.4.4.</p>
31 January 2037 or 60 days after the State informs aeroplane operators of their final offsetting requirements for the 2033-2035 period	The aeroplane operator shall cancel emissions units for compliance during the 2033-2035 period in accordance with Part II, Chapter 4, 4.2.
7 February 2037	The aeroplane operator shall request that their cancellation of Eligible Emissions Units for the 2033-2035 period is communicated on the respective Eligible Emission Units Program registry (or registries) public website(s) in accordance with Part II, Chapter 4, 4.2.2 c).
1 December 2036 to 30 April 2037	The aeroplane operator shall compile their Emissions Unit Cancellation Report covering the 2033-2035 period to be verified by a verification body, in accordance with Part II, Chapter 4, 4.4.
30 April 2037	The aeroplane operator and the verification body shall submit the verified Emissions Unit Cancellation Report and associated Verification Report for the 2033-2035 compliance period to the State in accordance with Part II, Chapter 4, 4.4.1.4.
1 May 2037 to 31 July 2037	The State shall undertake an order of magnitude check of the verified Emissions Unit Cancellation Report for the 2033-2035 period in accordance with Part II, Chapter 4, 4.4.1.5.
31 July 2037	The State shall report to ICAO the required information regarding emissions unit cancellation for the 2033-2035 period in accordance with Part II, Chapter 4, 4.3.2.

APPENDIX 2. FUEL USE MONITORING METHODS

1. INTRODUCTION

Note. — The procedures specified in this appendix are concerned with the monitoring of fuel use by aeroplane operators. The methods proposed are representative of the most accurate established practices.

Any equivalent procedures to those contained in this appendix shall only be allowed after prior application to and approval by the State.

2. FUEL USE MONITORING METHODS

2.1 The aeroplane operator, with the exception of an aeroplane operator eligible to use the ICAO CORSIA CO₂ Estimation & Reporting Tool (CERT), shall choose from the following fuel use monitoring methods;

- a) Method A;
- b) Method B;
- c) Block-off / Block-on;
- d) Fuel Uplift; or
- e) Fuel Allocation with Block Hour.

2.2 Method A

Note. — See Attachment C-1 for process diagram for collecting the required data to implement Method A.

2.2.1 The aeroplane operator shall use the following formula to compute fuel use according to Method A:

$$F_N = T_N - T_{N+1} + U_{N+1}$$

where:

- F_N = Fuel consumed for the flight under consideration (=flight _N) determined using Method A (in tonnes);
- T_N = Amount of fuel contained in aeroplane tanks once fuel uplifts for the flight under consideration (i.e., flight _N) are complete (in tonnes);
- T_{N+1} = Amount of fuel contained in aeroplane tanks once fuel uplifts for the subsequent flight (i.e., flight _{N+1}) are complete (in tonnes);
- 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 tonnes).

Note 1. — See Part II Chapter 2, 2.2.3.1 for requirements on fuel density values.

Note 2. — 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 Attachment C-2 for process diagram for collecting the required data to implement Method A.

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 subsequent flight (i.e., flight $N+1$). This is of particular importance when a domestic flight is followed by an international flight, as defined in Part II, Chapter 1, 1.1.2, 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 aeroplane which are used for international flights, as defined in Part II, Chapter 1, 1.1.2. For the same reasons, fuel uplift data for all flights of those aeroplane should be collected, before deciding which flights are international.

2.2.2 The aeroplane operator performing on an ad-hoc basis flights attributed to another aeroplane operator shall provide to the latter the fuel measurement values according to the Block-off / Block-on method.

2.2.3 Where no fuel uplift for the flight or subsequent flight takes place, the amount of fuel contained in aeroplane tanks (T_N or T_{N+1}) shall 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 aeroplane 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 aeroplane 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 aeroplane or fuel in tanks at Block-on, as recorded by technical logs.

2.3 Method B

Note. — See Attachment C-3 for process diagram for collecting the required data to implement Method B.

2.3.1 The aeroplane operator shall use the following formula to compute fuel use according to Method B:

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

where:

F_N = Fuel consumed for the flight under consideration (i.e., flight N) determined using Method B (in tonnes);

R_{N-1} = Amount of fuel remaining in aeroplane tanks at the end of the previous flight (i.e., flight $N-1$) at Block-on before the flight under consideration, (in tonnes);

R_N = Amount of fuel remaining in aeroplane tanks at the end of the flight under consideration (i.e., flight N) at Block-on after the flight, (in tonnes);

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

Note 1. — See Part II Chapter 2, 2.2.3.1 for requirements on fuel density values.

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; See Attachment C-4 for process diagram for collecting the required data to implement Method B.

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 aeroplane which are used for international flights, as defined in Part II, Chapter 1, 1.1.2. For the same reasons, fuel uplift data for all flights of those aeroplane should be collected, before deciding which flights are international.

2.3.2 The aeroplane operator performing on an ad-hoc basis flights attributed to another aeroplane operator shall provide to the latter the fuel measurement values according to the Block-off / Block-on method.

2.3.3 Where an aeroplane 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 aeroplane operator may substitute the quantity R_{N-1} with the Amount of fuel remaining in aeroplane tanks at the end of the previous activity of the aeroplane,

as recorded by technical logs.

2.4 Block-off / Block-on

Note. — See Attachment C-5 for process for monitoring fuel use by flight using Method Block-off / Block-on, and Attachment C-6 for the process for collecting the required data to implement Method Block-off / Block-on

2.4.1 The aeroplane operator shall use the following formula to compute fuel use according to the Block-off / Block-on Method:

$$F_N = T_N - R_N$$

where:

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

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

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

2.5 Fuel Uplift

Note. — See Attachment C-7 for process diagram for monitoring fuel use by flight using the Fuel Uplift Method.

2.5.1 For flights with a fuel uplift unless the subsequent flight has no uplift, the aeroplane operator shall use the following formula to compute fuel use according to the Fuel Uplift Method:

$$F_N = U_N$$

where:

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

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

Note. — See Part II Chapter 2, 2.2.3.1 for requirements on fuel density values.

2.5.2 For flight(s) without a fuel uplift (i.e., flight $N+1$, ..., flight $N+n$), the aeroplane operator shall 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 consumed for the flight under consideration (i.e., flight N) determined using fuel uplift (in tonnes);

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

...

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

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

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).

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

2.6 Fuel Allocation with Block Hour

Note. — See Attachment C-8 for process diagram for monitoring fuel use by flight using Fuel Allocation with Block Hour method.

2.6.1 Computation of average fuel burn ratios

2.6.1.1 For an aeroplane operator which can clearly distinguish between international and domestic fuel uplifts, the aeroplane operator shall compute, for each aeroplane type, the average fuel burn ratios by summing up all actual fuel uplifts from international flights, as defined in Part II, Chapter 1, 1.1.2, divided by the sum of all actual block hours from international flights for a given year, as defined in Part II, Chapter 1, 1.1.2, 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 aeroplane operator (AO) and aeroplane type (AT) (in tonnes per hour),

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

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

2.6.1.2 For an aeroplane operator which cannot clearly distinguish between international and domestic fuel uplifts, the aeroplane operator shall compute, for each aeroplane 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 aeroplane operator (AO) and aeroplane type (AT) (in tonnes per hour),

$U_{AO,AT,N}$ = Fuel uplifted for the international or a domestic flight N for aeroplane operator (AO) and

aeroplane type (AT) measured in volume and multiplied with a specific density value (in tonnes),
 $BH_{AO, AT, N}$ = Block hour for the international and domestic flight N for aeroplane operator (AO) and aeroplane type (AT) (in hours).

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

Note 1. — See Part II Chapter 2, 2.2.3.1 for requirements on fuel density values.

Note 2. — Aeroplane types are contained in ICAO Document Aircraft Type Designators (Doc 8643).

2.6.2 Computation of fuel use for individual flights

2.6.2.1 The aeroplane operator shall compute the fuel consumption for each international flight by multiplying the aeroplane 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 tonnes);

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

$BH_{AO, AT, N}$ = Block hour for the international flight under consideration (=flight N) for aeroplane operator (AO) and aeroplane 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 assessment of the aeroplane 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.

2.6.2.2 A verification body shall cross-check whether the emissions reported are reasonable in comparison to other fuel related data of the aeroplane operator.

APPENDIX 3. CO₂ EMISSIONS ESTIMATION AND REPORTING METHODS AND TOOLS

1. INTRODUCTION

Note 1. — The procedures specified in this appendix are concerned with the estimation of CO₂ emissions by an aeroplane operator for the purposes of monitoring CO₂ emissions and filling data gaps. The methods and tools proposed are representative of most accurate established practices.

Note 2. — The ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) can be obtained from the ICAO document entitled; “ICAO CORSIA CO₂ Estimation and Reporting Tool” for use in a given year. The CERT can be found on the ICAO CORSIA website.

2. ICAO CORSIA CO₂ ESTIMATION & REPORTING TOOL (CERT)

2.1 Use of the ICAO CORSIA CERT for complying with monitoring and reporting requirements

Note 1. — The ICAO CORSIA CERT is developed for and made available to aeroplane operators to support the monitoring and reporting of their CO₂ emissions. The CERT supports aeroplane operators in fulfilling their monitoring and reporting requirements by populating the standardized Emissions Monitoring Plan and Emissions Report templates provided in Appendix 1 of the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This support includes:

- a) assessing its eligibility to use the CERT, as defined in Appendix 3, in support of their Emissions Monitoring Plan (e.g., CO₂ emissions threshold requirements);*
- b) assessing whether or not it is within the applicability scope of Part II, Chapter 2 MRV requirements; and*
- c) filling any CO₂ emissions data gaps.*

Note 2. — The ICAO CORSIA CERT is also made available to States to support order of magnitude checks and fill any CO₂ emissions data gaps as described in Part II Chapter 2, 2.5.2.1.

2.1.1 The aeroplane operator shall use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) according to the eligibility criteria as described in Part II, Chapter 2 and upon approval by the State to which they are attributed.

2.1.2 The aeroplane operator shall use either the (1) Block Time input method or (2) the Great Circle Distance input method to enter the necessary information into the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT).

2.1.3 The aeroplane operator approved to use the Block Time input method shall collect the following data and shall enter it into the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) to estimate its CO₂ emissions during the compliance year;

- a) ICAO aircraft type - model designator
- b) Origin aerodrome ICAO Designator
- c) Destination aerodrome ICAO Designator
- d) Block time (in hours)
- e) Number of flights

f) Date (optional)

g) Flight ID (optional)

2.1.4 The aeroplane operator approved to use the Great Circle Distance input method shall collect the following data and shall enter it into the ICAO CORSIA CO₂ Estimation & Reporting Tool (CERT) to estimate its CO₂ emissions during the compliance year;

a) ICAO aircraft model - type designator

b) Origin aerodrome

c) Destination aerodrome

d) Number of flights

e) Date (optional)

f) Flight ID (optional)

Note 1. — The ICAO Aircraft Type - Model Designators are contained in the ICAO Aircraft Type Designators (Doc 8643).

Note 2. — The origin aerodrome and destination aerodrome designators are contained in the ICAO Manual on Location Indicators (Doc 7910).

Note 3. — The ICAO CORSIA CERT will automatically compute Great Circle Distance based on the origin aerodrome and destination aerodrome.

2.2 Collection of data to develop and maintain the ICAO CO₂ estimation module used within the CORSIA CERT

2.2.1 **Recommendation:** *States should contribute to improving the ICAO CO₂ estimation module used within the CORSIA CERT by collecting flight level fuel burn data from aeroplane operators who are willing to share this information. Aeroplane operator data should include:*

a) *Date and time (in Universal Time Coordinated)*

b) *ICAO aircraft type - model designator*

c) *Origin aerodrome ICAO Designator*

d) *Destination aerodrome ICAO Designator*

e) *Block hour (in hours to 2 decimal places)*

f) *Fuel used (in tonnes to at least 1 decimal place) based on a Fuel Use Monitoring Method as described in Appendix 2*

g) *Type of Fuel Use Monitoring Method used*

h) *Aircraft maximum certificated take-off mass (in kg)*

i) *Flight Great Circle Distance (in km)*

2.2.2 Recommendation: States should share data with ICAO for continuous improvement of the ICAO CO₂ estimation module used within the CORSIA CERT. If a State shares data, then this will include:

- a) Date and time (in Universal Time Coordinated)
- b) Generic code to de-identify aeroplane operator information and allow integration of information
- c) ICAO Aircraft Type - Model Designator
- d) Flight Great Circle Distance (in km)
- e) Block hour (in hours to 2 decimal places)
- f) Fuel used (in tonnes to at least 1 decimal place based on a fuel use monitoring method as described in Appendix 2)
- g) Type of Fuel Use Monitoring Method used

2.2.3 States shall anonymize the aeroplane operator data shared with ICAO under 2.2.2, if data is shared as per 2.2.2.

APPENDIX 4 EMISSIONS MONITORING PLANS

1. INTRODUCTION

The Emissions Monitoring Plan of an aeroplane operator shall contain the information listed in Section 2 of this Appendix.

2. CONTENT OF EMISSIONS MONITORING PLANS

Note. – The template of an Emissions Monitoring Plan (from aeroplane operator to State) is provided in Appendix I of the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).

2.1 Aeroplane operator identification

2.1.1 Name and address of the aeroplane operator with legal responsibility.

2.1.2 Information for attributing the aeroplane operator to a State:

a) **ICAO Designator:** ICAO Designator(s) used for air traffic control purposes, as listed in *ICAO Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services* (Doc 8585).

b) **Air operator certificate:** If the aeroplane operator does not have an ICAO Designator, then a copy of the air operator certificate.

c) **Place of juridical registration:** If the aeroplane operator does not have an ICAO Designator or an air operator certificate, then the aeroplane operator's place of juridical registration.

2.1.3 Details of ownership structure relative to any other aeroplane operators with international flights, as defined in Part II, Chapter 1, 1.1.2, including identification of whether the aeroplane operator is a parent company to other aeroplane operators with international flights, as defined in Part II, Chapter 1, 1.1.2, a subsidiary of another aeroplane operator(s) with international flights, as defined in Part II, Chapter 1, 1.1.2, and/or has a parent and or subsidiaries that are aeroplane operators with international flights, as defined in Part II, Chapter 1, 1.1.2.

2.1.4 If the aeroplane operator in a parent-subsidiary relationship seeks to be considered a single aeroplane operator for purposes of this Volume, then confirmation shall be provided that the parent and subsidiary(ies) are attributed to the same State and that the subsidiary(ies) are wholly-owned by the parent.

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

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

2.2 Fleet and operations data

2.2.1 List of the aeroplane types and type of fuel (e.g. Jet-A, Jet-A1, Jet-B, AvGas) used in aeroplanes operated for international flights, as defined in Part II, Chapter 1, 1.1.2, at the time of submission of the Emissions Monitoring Plan, recognizing that there may be changes over time. The list shall include:

a) Aeroplane types with a maximum certificated take-off mass of 5 700 kg or greater and the number of aeroplane per type, including owned and leased aeroplanes,

Note 1. — Aeroplane types are contained in ICAO Document Aircraft Type Designators (Doc 8643).

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

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

Note. — The aeroplane operator using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) does not need to specify the type of petroleum-based fuel used by aeroplanes.

2.2.2 Information used for attributing international flights, as defined in Part II, Chapter 1, 1.1.2, to the aeroplane operator:

- a) **ICAO Designator:** List of the ICAO Designator(s) used in Item 7 of the aeroplane operator's flight plans.
- b) **Registration marks:** If the aeroplane operator does not have an ICAO Designator, then a list of the nationality or common mark, and registration mark of aeroplanes that are explicitly stated in the air operator certificate (or equivalent) and used in Item 7 of the Operator's flight plans.
- c) **Emissions Monitoring Plan code:** If the aeroplane operator does not have an ICAO Designator or an air operator certificate, then the aeroplane operator shall propose an alternative means for flight attribution based on what it reports in Item 7 of the Operator's flight plans (e.g., specific code, list of marks/tail registrations, etc.).

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

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

2.2.5 Procedures for determining which aeroplane flights meet the definition of "international" flights, and are therefore subject to the Part II, Chapter 2 requirements.

Note. — The aeroplane operator using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) could use the functionality of the CERT to identify international flights, as defined in Part II, Chapter 1, 1.1.2, as long as all flights (i.e., domestic and international) conducted during the reporting year are entered as input into the tool.

2.2.6 List of States to where the aeroplane operator operates international flights, as defined in Part II, Chapter 1, 1.1.2, at the time of initial submission of the Emissions Monitoring Plan.

Note. — The aeroplane 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.

2.2.7 Procedures for determining which international aeroplane flights are subject to Part II, Chapter 3 requirements,

Note. — The aeroplane 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 Part II, Chapter 3, 3.1 in a given year of compliance as long as the aeroplane operator uses the correct version (i.e., year of compliance) of the CERT.

2.2.8 Procedures for identifying domestic flights and/or humanitarian, medical or firefighting international flights, as defined in Part II, Chapter 1, 1.1.2, that would not be subject to Part II, Chapter 2 requirements.

2.3 Methods and means of calculating emissions from international flights

2.3.1 Methods and Means for Establishing the Average Emissions during the 2019-2020 Period

2.3.1.1 If the aeroplane operator meets the eligibility criteria in Part II, Chapter 2, 2.2.1.2.2 and chooses to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) as described in Appendix 3, then the following information shall be provided:

- a) An estimate of CO₂ emissions for all international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1, for 2019 with supporting information on how the estimation was calculated.
- b) The type of input method used in the ICAO CORSIA CO₂ Estimation & Reporting Tool (CERT);
 - Great Circle Distance input method; or
 - Block Time input method.

Note. – Guidance on estimating CO₂ emissions for 2019 is provided in the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

2.3.1.2 If the aeroplane operator meets the eligibility criteria in Part II, Chapter 2, 2.2.1.2.1, or chooses to use a Fuel Use Monitoring method as described in Appendix 2, then the following information shall be provided:

- a) 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.
- b) If different Fuel Use Monitoring Methods are to be used for different aeroplane types, then the aeroplane operator shall specify which method applies to which aeroplane type;
- c) 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 aeroplane operator documentation; and
- d) The systems and procedures to monitor fuel consumption in both owned and leased aeroplane. If the aeroplane operator has chosen the Fuel Allocation with Block Hour method, information shall be provided on the systems and procedures used to establish the average fuel burn ratios as described in Appendix 2.

2.3.1.3 If the aeroplane operator is in a parent-subsidiary relationship and seeks to be considered as a single aeroplane operator for purposes of this Volume, then it shall 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 shall be used to establish individual average emissions during the 2019-2020 period for the parent and subsidiary (or subsidiaries).

2.3.2 Methods and Means for Emissions Monitoring and Compliance on or after 1 January 2021

2.3.2.1 If the aeroplane operator has international flights, as defined in Part II, Chapter 1, 1.1.2, but these are not subject to offsetting requirements as defined in Part II Chapter 3, 3.1, then it shall confirm whether it plans to use the ICAO CORSIA CO₂ Estimation & Reporting Tool (CERT) as described in Appendix 3 or the Fuel Use Monitoring Methods as described in Appendix 2.

2.3.2.2. If the aeroplane operator meets the eligibility criteria in Part II, Chapter 2, 2.2.1.3.2, and it chooses to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) as described in Appendix 3, then the following information shall be provided:

- a) An estimate of CO₂ emissions for all international flights, as defined in Part II, Chapter 1, 1.1.2, subject to offsetting requirements, as defined in Part II, Chapter 3, 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.
- b) The type of input method used in the ICAO CORSIA CO₂ Estimation & Reporting Tool (CERT);
 - Great Circle Distance input method; or
 - Block Time input method.

2.3.2.3 If the aeroplane operator meets the eligibility criteria in Part II, Chapter 2, 2.2.1.3.1, or chooses to use a Fuel Use Monitoring method as described in Appendix 2, then the following information shall be provided:

- a) 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.
- b) If different Fuel Use Monitoring Methods are to be used for different aeroplane types, then the aeroplane operator shall specify which method applies to which aeroplane type,
- c) 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 aeroplane operator documentation; and
- d) The systems and procedures to monitor fuel consumption in both owned and leased aeroplane. If the aeroplane operator has chosen the Fuel Allocation with Block Hour method, information shall be provided on the systems and procedures used to establish the average fuel burn ratios as described in Appendix 2.

2.3.2.4 If the aeroplane operator is using a Fuel Use Monitoring Method, as defined in Appendix 2, it shall state whether it plans to use the ICAO CORSIA CERT for international flights, as defined in Part II, Chapter 1, 1.1.2, that are subject to emissions monitoring but not offsetting requirements. If so, the aeroplane operators shall also state which input method into the ICAO CORSIA CERT is being used (i.e., Great Circle Distance Input Method, or Block Time Input Method).

2.4 Data management, data flow and control

2.4.1 The aeroplane operator shall provide the following information:

- a) roles, responsibilities and procedures on data management;
- b) 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 aeroplane 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.
- c) documentation and record keeping plan;
- d) assessment of the risks associated with the data management processes and means for addressing significant risks;
- e) procedures for making revisions to the Emissions Monitoring Plan and resubmitting relevant portions to the State when there are material changes;
- f) procedures for providing notice in the Emissions Report of non-material changes that require the attention of the State;
- g) a data flow diagram summarizing the systems used to record and store data associated with the monitoring and reporting of CO₂ emissions.

APPENDIX 5. REPORTING

1. INTRODUCTION

Note. – The procedures specified in this appendix are concerned with the reporting requirements under Part II of this Volume.

1.1 Unless otherwise stated, fuel use and CO₂ emissions shall be reported to the nearest tonne.

2. CONTENT OF EMISSIONS REPORT FROM AEROPLANE OPERATOR TO STATE

Table A5-1. Content of aeroplane operator Emissions Report

Note. – The template of an Emissions Report (from aeroplane operator to State) is provided in Appendix 1 of the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).

<i>Field #</i>	<i>Data Field</i>	<i>Details</i>
Field 1	Aeroplane operator information	1.a Name of aeroplane operator 1.b Detailed contact information of aeroplane operator 1.c Name of a point of contact 1.d Method and identifier used to attribute an aeroplane operator to a State in accordance with Part II, Chapter 1, 1.2.4 1.e State
Field 2	Reference details of aeroplane operator Emissions Monitoring Plan	2 Reference to the Emissions Monitoring Plan that is the basis for emissions monitoring that year <i>Note. - State may require providing reference to updated Emissions Monitoring Plan, if applicable.</i>
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 aeroplane 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 tonnes) • Jet-A1 (in tonnes) • Jet-B (in tonnes) • AvGas (in tonnes) <i>Note 1. – Above totals to include sustainable aviation fuels.</i> <i>Note 2.- The aeroplane operator using the ICAO CORSIA CERT, as described in Appendix 3, does not need to report Field 5.</i>

Field 6	Total number of international flights during the reporting period	6.a Total number of international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1, during the reporting period <i>Note. - Total (sum of values from Field 7)</i>
Field 7	Number of international flights per State pair or aerodrome pair	7.a Number of international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1, per State pair (no rounding), or; 7.b Number of international flights, as defined in Part II, Chapter 1, 1.1.2 per aerodrome pair (no rounding).
Field 8	CO ₂ emissions per aerodrome pair or State pair	8.a CO ₂ emissions from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1 per State pair (in tonnes); or 8.b CO ₂ emissions from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1 per aerodrome pair (in tonnes).
Field 9	Scale of data gaps	9.a Per cent of data gaps (according to criteria defined in Part II, Chapter 2, 2.5.1 and rounded to the nearest 0.1%) 9.b Reason for data gaps if per cent of data gaps exceeds the threshold defined in Part II, Chapter 2, 2.5.1
Field 10	Aeroplane information	10.a List of aeroplane types 10.b Aeroplane identifiers used in flight plans' Item 7 during the year for all international flights, as defined in Part II, Chapter 1, 1.1.2. Where the identifier is based on an ICAO Designator, only the ICAO Designator is to be reported 10.c Information on leased aeroplanes 10.d Average fuel burn ratio (AFBR) for each aeroplane type under 10.a in line with ICAO Aircraft Type Designator Doc. 8643 (in tonnes per hour to 3 decimal places) <i>Note: - 10.d is only required if the aeroplane operator is using the Fuel Allocation with Block Hour method, as defined in Appendix 2.</i>
Field 11	Eligibility for and use of the ICAO CORSIA CO ₂ Estimation and Reporting Tool (CERT) as per Part II, Chapter 2, 2.2.1	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, as defined in Part II, Chapter 1, 1.1.2, not subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1
Field 12	Sustainable aviation fuel Claimed	12.a Fuel type (i.e., type of fuel, feedstock and conversion process) 12.b Total mass of the neat sustainable aviation fuel claimed (in tonnes) per fuel type
<i>Note.- If emissions reductions from the use of sustainable aviation fuel are claimed, see Table A5-2 for supplementary information that is to be provided with the aeroplane operator's Emissions Report.</i>	Emissions Information (per fuel type)	12.c Approved Life Cycle Emissions values 12.d Emission reductions claimed from a sustainable aviation fuel (as calculated in accordance with equations described in Part II, Chapter 3, 3.3 and reported in tonnes)
	Emissions Reductions (total)	12.e Total emissions reductions claimed from the use of all sustainable aviation fuels (in tonnes) <i>Note. – During the 2019-2020 period, fields 12.a to 12.e are not required as the applicability of Part II, Chapter 3 starts on 1 January 2021 i.e., there are no offsetting requirements and no emissions reductions from the use of sustainable alternative fuels during the 2019-2020 period.</i>

Field 13	Total CO ₂ emissions	<p>13.a Total CO₂ emissions (based on total mass of fuel in tonnes from Field 5 and reported in tonnes)</p> <p>13.b Total CO₂ emissions from flights subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1 (in tonnes)</p> <p>13.c Total CO₂ emissions from international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1 and that are not subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1 (in tonnes)</p> <p><i>Note. – During the 2019-2020 period, only fields 13.a is required as the applicability of Part II, Chapter 3 starts on 1 January 2021 i.e., there are no State pairs subject to offsetting requirements during the 2019-2020 period.</i></p>
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Note. — The State may expand on this list to include additional or more detailed data from aeroplane operators registered in their State.

Table A5-2. Supplementary information to an aeroplane operator's Emissions Report if emissions reductions from the use of each sustainable aviation fuel being claimed

Note. – The template of a sustainable aviation fuels supplementary information to the Emissions Report (from aeroplane operator to State) is provided in Appendix 1 of the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

Field #	Data Field	Details
Field 1	Purchase date of the sustainable aviation fuel	
Field 2	Identification of the producer of the sustainable aviation fuel	<p>2.a Name of producer of the sustainable aviation fuel</p> <p>2.b Contact information of the producer of the sustainable aviation fuel</p>
Field 3	Fuel Production	<p>3.a Production date of the sustainable aviation fuel</p> <p>3.b Production location of the neat sustainable aviation fuel</p> <p>3.c Batch number of each batch of sustainable aviation fuel</p> <p>3.d Mass of each batch of sustainable aviation fuel produced</p>
Field 4	Fuel type	<p>4.a Type of fuel (i.e., Jet-A, Jet-A1, Jet-B, AvGas)</p> <p>4.b Feedstock used to create the sustainable aviation fuel</p> <p>4.c Conversion process used to create the sustainable aviation fuel</p>
Field 5	Fuel Purchased	<p>5.a Proportion of neat sustainable aviation fuel batch purchased (rounded to the nearest %)</p> <p><i>Note. - If less than an entire batch of sustainable aviation fuel is purchased.</i></p> <p>5.b Total mass of each batch of sustainable aviation fuel purchased (in tonnes)</p> <p>5.c Mass of neat sustainable aviation fuel purchased (in tonnes)</p> <p><i>Note. — Field 5.c is equal to the total for all batches of sustainable aviation fuels reported in Field 5.b.</i></p>
Field 6	Evidence that fuel satisfies the	i.e., valid sustainability certification document

	CORSIA Sustainability Criteria	
Field 7	Life cycle emissions values of the sustainable aviation fuel	<p>7.a Default or Actual Life Cycle Emissions Value (LS_f) value for given sustainable aviation fuel f, which is equal to the sum of 7.b and 7.c (in gCO_2e/MJ rounded to the nearest whole number)</p> <p>7.b Default or Actual Core Life Cycle Assessment (LCA) value for given sustainable aviation fuel f (in gCO_2e/MJ rounded to the nearest whole number)</p> <p>7.c Default Induced Land Use Change (ILUC) value for given sustainable aviation fuel f (in gCO_2e/MJ rounded to the nearest whole number)</p>
Field 8	Intermediate purchaser	<p>8.a Name of the intermediate purchaser</p> <p>8.b Contact information of the intermediate purchaser</p> <p><i>Note. — This information would be included in the event that the aeroplane operator claiming emissions reductions from the use of sustainable aviation fuels was not the original purchaser of the fuel from the Producer (e.g., the aeroplane 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.</i></p>
Field 9	Party responsible for shipping of the neat sustainable aviation fuel to the fuel blender	<p>9.a Name of party responsible for shipping of the neat sustainable aviation fuel to the fuel blender</p> <p>9.b Contact information of party responsible for shipping of the neat sustainable aviation fuel to the fuel blender</p>
Field 10	Fuel Blender	<p>10.a Name of the party responsible for blending neat sustainable aviation fuel with conventional aviation fuel</p> <p>10.b Contact information of the party responsible for blending neat sustainable aviation fuel with conventional aviation fuel</p>
Field 11	Location where neat sustainable aviation fuel is blended with conventional aviation fuel	
Field 12	Date the neat sustainable aviation fuel was received by blender	
Field 13	Mass of neat sustainable aviation fuel received (in tonnes)	<i>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 aeroplane operator.</i>
Field 14	Blend ratio of sustainable aviation fuel and conventional aviation fuel (rounded to the nearest %)	
Field 15	Documentation demonstrating that the batch or batches of sustainable aviation fuel were blended into conventional aviation fuel (e.g., the subsequent Certificate of Analysis of the blended fuel)	
Field 16	Mass of neat sustainable aviation fuel claimed (in tonnes)	

3. CONTENT OF EMISSIONS REPORT FROM STATE TO ICAO

3.1 List of aeroplane operators attributed to the State and verification bodies accredited in a State

Table A5-3. State Report of aeroplane operators attributed to the State and verification bodies accredited in the State

Field #	Data Field	Details
Field 1	List of aeroplane operators attributed to the State	1.a Name and contact information of aeroplane operator 1.b Aeroplane operator Code 1.c Method and identifier used to attribute aeroplane operator to a State in accordance with Part II, Chapter 1, 1.2.4
Field 2	List of verification bodies accredited in the State (for a given year of compliance)	2.a State 2.b Name of verification body

Note. – 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:

- List of aeroplane operator attributed to the State; and
- List of verification bodies accredited in each State.

3.2 Emissions Report from a State to ICAO

Table A5-4. Emissions Report from a State to ICAO for 2019 and 2020

Field #	Data Field	Details
Field 1	Total annual CO ₂ emissions per State pair aggregated for all aeroplane operators attributed to the State (in tonnes)	<i>Note.</i> – Include emissions from sustainable aviation fuels, calculated using fuel conversion factor(s) from corresponding conventional aviation fuels, in accordance with Part II, Chapter 2, 2.2.3.3.

Table A5-5. Emissions Report from a State to ICAO annually after 2021

Field #	Data Field	Details
Field 1	Total annual CO ₂ Emissions on each State pair aggregated for all aeroplane operators attributed to the State	1.a Total annual CO ₂ emissions on each State pair subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1, aggregated for all aeroplane operators attributed to the State (in tonnes) 1.b Total annual CO ₂ emissions on each State pair not subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1, aggregated for all aeroplane operators attributed to the State (in tonnes)
Field 2	Total annual CO ₂ emissions for each aeroplane operator attributed to the State	2.a Total annual CO ₂ emissions for each aeroplane operator attributed to the State (in tonnes) 2.b Indicate whether the ICAO CORSIA CO ₂ Estimation and Reporting Tool (CERT), as defined in Appendix 3 is used
Field 3	Total aggregated annual CO ₂ emissions for all State pairs subject to	

	offsetting requirements, as defined in Part II, Chapter 3, 3.1, for each aeroplane operator attributed to the State (in tonnes)	
Field 4	Total aggregated annual CO ₂ emissions for all State pairs not subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1 for each aeroplane operator attributed to the State (in tonnes)	

Note 1. – Information on the following fields can be found in the ICAO document entitled; “CORISIA Central Registry (CCR): Information and Data for Transparency” that is available from the ICAO CORISIA website:

- a) Total average CO₂ emissions for 2019 and 2020 aggregated for all aeroplane operators on each State pair;
- b) Total annual CO₂ emissions aggregated for all aeroplane operators on each State pair, (with identification of State pairs subject to offsetting requirements i.e., Part II, Chapter 3 in a given year) (Field 1); and
- c) For each aeroplane operator:
 - o Aeroplane operator name;
 - o State in which aeroplane operator is attributed;
 - o Reporting year;
 - o Total annual CO₂ emissions (Field 2);
 - o Total aggregated annual CO₂ emissions for all State pairs subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1 (Field 3); and
 - o Total aggregated annual CO₂ emissions for all State pairs not subject to offsetting requirements, as defined in Part II, Chapter 3, 3.1 (Field 4).

Note 2. – Where CO₂ emissions are based on the ICAO CORISIA CO₂ Estimation and Reporting Tool as described in Appendix 3, this will be indicated.

Note 3. – All data recognized as confidential in accordance with Part II, Chapter 2, 2.3.1.6 will be aggregated and published by ICAO without attribution to a specific aeroplane operator. All data recognized as confidential in accordance with Part II, Chapter 2, 2.3.1.7 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 Part II, Chapter 3, 3.1 and those not subject to offsetting requirements.

3.3 Use of sustainable aviation fuels in a State

Table A5-6 Sustainable aviation fuels supplementary information to the Emissions Report from a State to ICAO

Field#	Data Field	Details	Notes
Field 1	Production	1.a Production year of sustainable aviation fuel claimed 1.b Producer of sustainable aviation fuel	
Field 2	Batch of Fuel of Sustainable Aviation Fuel	2.a Batch number(s) of each sustainable aviation fuel claimed 2.b Total mass of each batch of sustainable aviation fuel claimed (in tonnes)	

Field 3	Sustainable Aviation Fuel Claimed	3.a Fuel types (i.e., type of fuel, feedstock and conversion process) 3.b Total mass of the neat sustainable aviation fuel (in tonnes) per fuel type being claimed by all the aeroplane operators attributed to the State	<i>This would provide a total mass for each fuel type being claimed by all aeroplane operators attributed to the State.</i>
Field 4	Emissions Information (per fuel type)	4. Total emissions reductions claimed from the use of a sustainable aviation fuel (in tonnes)	
Field 5	Emissions Reductions (total)	5. Total emission reductions claimed by all aeroplane operators attributed to the State from the use of all sustainable aviation fuel use (in tonnes)	

Note. – In order to avoid double claiming of sustainable aviation 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:

- a) *Production year of the sustainable aviation fuel claimed;*
- b) *Producer of the sustainable aviation fuel claimed;*
- c) *Type of fuel, feedstock and conversion process for each sustainable aviation fuel claimed;*
- d) *Batch number(s) of each sustainable aviation fuel claimed; and*
- e) *Total mass of each batch of sustainable aviation fuel claimed.*

4. CONTENT OF EMISSIONS UNIT CANCELLATION REPORT FROM AEROPLANE OPERATOR TO STATE

Table A5-7. Emissions Unit Cancellation Report from aeroplane operator to State

<i>Field #</i>	<i>Data Field</i>	<i>Details</i>
Field 1	Aeroplane operator information	1.a Name of aeroplane operator 1.b Detailed contact information of aeroplane operator 1.c Name of a point of contact 1.d Unique identifier by which an aeroplane operator is attributed to a State, in accordance with Part II, Chapter 2, 1.2.4 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	Aeroplane operator’s total final offsetting requirements	3. Aeroplane operator’s total final offsetting requirements (in tonnes), as informed by the State
Field 4	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	<p>For each batch of cancelled emissions units (<i>batch</i> defined as a contiguous quantity of serialized emissions units), identify the following:</p> <p>5.a Quantity of emissions units cancelled;</p> <p>5.b Start of serial numbers;</p> <p>5.c End of serial numbers;</p> <p>5.d Date of cancellation;</p> <p>5.e Eligible emissions unit program;</p> <p>5.f Unit type;</p> <p>5.g Host country;</p> <p>5.h Methodology⁷;</p> <p>5.i Demonstration of unit date eligibility;</p> <p>5.j Program-designated registry name;</p> <p>5.k Unique identifier for registry account to which the batch was cancelled;</p> <p>5.l Aeroplane operator in whose name the unit was cancelled; and</p> <p>5.m The unique identifier for the registry account from which the cancellation was initiated.</p>
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Note. — The State may expand on this list to include additional or more detailed data from aeroplane operators registered in their State.

5. CONTENT OF EMISSIONS UNIT CANCELLATION REPORT FROM STATE TO ICAO

Table A5-8. Content of Emissions Unit Cancellation Report from State to ICAO

<i>Field #</i>	<i>Data Field</i>	<i>Details</i>
Field 1	Aeroplane operators attributed to the State	1.a Aeroplane operators attributed to the State with offsetting requirements in the reported compliance period
Field 2	Compliance period years reported	2. Year(s) in the reported compliance period per for which offsetting requirements are reconciled in the report
Field 3	Total final offsetting requirements	3. Total aggregated aeroplane operators' final offsetting requirements (in tonnes), as informed by the State
Field 4	Total quantity of emissions units cancelled	4. Total aggregated quantity of emissions units cancelled to reconcile the final offsetting requirements in Field 3

⁷ Methodology may also be described as a 'protocol' or 'framework'.

Field 5	Consolidated identifying information for cancelled emissions units	<p>For each batch of cancelled emissions units (<i>batch</i> defined as a contiguous quantity of serialized emissions units), identify the following:</p> <p>5.a Quantity of emissions units cancelled;</p> <p>5.b Start of serial numbers;</p> <p>5.c End of serial numbers;</p> <p>5.d Date of cancellation;</p> <p>5.e Eligible emissions unit program;</p> <p>5.f Unit type;</p> <p>5.g Host country;</p> <p>5.h Methodology;</p> <p>5.i Demonstration of unit date eligibility; and</p> <p>5.j Program-designated registry name.</p>
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Note 1. — 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 2. — 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:

- 1) Total final offsetting requirements over the compliance period;*
- 2) Total quantity of emissions units cancelled over the compliance period to reconcile the total final offsetting requirements; and*
- 3) Consolidated identifying information for cancelled emissions units included in Field 5 of Table A5-8.*

APPENDIX 6. VERIFICATION

1. INTRODUCTION

Note — The procedures specified in this Appendix are concerned with the verification requirements in Part II of this Volume.

2. VERIFICATION BODY

2.1 The verification body shall be accredited to ISO 14065:2013, and meet the following additional requirements in order to be eligible to verify the Emissions Report, and the Emissions Unit Cancellation Report where applicable, of an aeroplane operator.

Note — The following documents should be used as normative references that provide guidance for the application of this Volume:

- a) *Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA);*
- b) *The International Accreditation Forum (IAF) document entitled, “IAF Mandatory Document for the Application of ISO 14065:2013 (IAF MD 6:2014)”;* and
- c) *The International Organization for Standardization (ISO) document entitled, “ISO 14066:2011 Greenhouse gases – Competence requirements for greenhouse gas validation team and verification teams”.*

2.2 Avoidance of conflict of interest (ISO 14065:2013 section 5.4.2)

2.2.1 If the leader of the verification team undertakes six annual verifications for one aeroplane operator, then the leader of the verification team shall take a three consecutive year break from providing verification services to that same aeroplane operator. The six year maximum period includes any greenhouse gas verifications performed for the aeroplane operator prior to it requiring verification services under this Volume.

2.2.2 The verification body, and any part of the same legal entity, shall not be an aeroplane operator, the owner of an aeroplane operator or owned by an aeroplane operator.

2.2.3 The verification body shall also be independent from bodies that trade emission units.

2.2.4 The relationship between the verification body and the aeroplane operator shall not be based on common ownership, common governance, common management or personnel, shared resources, common finances and common contracts or marketing.

2.2.5 The verification body shall not take over any delegated activities from the aeroplane 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..

2.2.6 To enable an assessment of impartiality and independence by the national accreditation body, the verification body shall document how it relates to other parts of the same legal entity.

2.3 Management and personnel (ISO 14065:2013 section 6.1)

2.3.1 The verification body shall 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 2.4, 2.5 and 2.6 of this Appendix.

2.3.2 The verification body shall maintain records to demonstrate the competency of the verification team and personnel in accordance with paragraph 2.4 of this Appendix.

2.4 Competencies of personnel (ISO 14065:2013 section 6.2)

The verification body shall:

- a) identify and select competent team personnel for each engagement;
- b) ensure appropriate verification team composition for the aviation engagement;
- c) ensure the verification team, at a minimum, includes a team leader who is responsible for the engagement planning and management of the team;
- d) ensure continued competence of all personnel conducting verification activities, including continual professional development and training for verifiers to maintain and/or develop competencies; and
- e) conduct regular evaluations of the competence assessment process to ensure that it continues to be relevant for this Volume.

2.5 Validation or verification team knowledge (ISO 14065:2013 section 6.3.2)

2.5.1 The verification team as a whole, and the independent reviewer, shall demonstrate knowledge of:

- a) the requirements as outlined in this Volume, the Assembly Resolution A39-3, the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)*, and any public ICAO explanatory material;
- b) the verification requirements as outlined in this Volume, and *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)*, including materiality threshold, verification criteria, verification scope and objectives and the Verification Report preparation and submission requirements;
- c) 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;
- d) the monitoring requirements as outlined in this Volume; and
- e) the national requirements in addition to the provisions set out in this Volume.

2.5.2 When conducting the verification of an Emissions Unit Cancellation Report, only 2.5.1 (a), (b) and (e) shall be applicable.

2.6 Validation or verification team technical expertise (ISO 14065:2013 section 6.3.3)

2.6.1 The verification team as a whole, and the independent reviewer, shall demonstrate knowledge in the following technical competencies:

- a) general technical processes in the field of civil aviation;
- b) aviation fuels and their characteristics, including sustainable aviation fuel;
- c) fuel related processes including flight planning and fuel calculation;
- d) relevant aviation sector trends or situations that may impact the CO₂ emissions estimate;
- e) CO₂ emissions quantification methodologies as outlined in this Volume, including assessment of Emissions Monitoring Plans;
- f) fuel use monitoring and measurement devices, and related procedures for monitoring of fuel use related to greenhouse gas emissions, including procedures and practices for operation, maintenance and calibration of such measurement devices;
- g) greenhouse gas information and data management systems and controls, including quality management systems and quality assurance / quality control techniques;
- h) aviation related IT systems such as flight planning software or operational management systems; and
- i) knowledge of approved CORSIA Sustainability Certification Schemes relevant for sustainable aviation fuels under this Volume, including certification scopes.

2.6.2 Evidence of the above competencies shall include previous, direct professional experience in a technical capacity within the aviation sector, complemented by appropriate training and education credentials.

2.6.3 When conducting the verification of an Emissions Unit Cancellation Report, only 2.6.1 (g) shall be applicable.

2.7 Validation or verification team data and information auditing (ISO 14065:2013 section 6.3.4)

2.7.1 The verification team as a whole shall 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.

2.7.2 Evidence of data and information auditing expertise and competencies shall include previous professional experience in auditing and assurance activities, complemented by appropriate training and education credentials.

2.8 Use of contracted validators and verifiers (ISO 14065:2013 section 6.4)

The verification body shall document roles and responsibilities of the verification personnel, including contracted persons involved in the verification activity.

2.9 Outsourcing (ISO 14065:2013 section 6.6)

2.9.1 The verification body shall not outsource the final decision on the verification and the issuance of the verification statement.

2.9.2 The independent review shall only be outsourced as long as the outsourced service is appropriate, competent, and covered by the accreditation.

2.10 Confidentiality (ISO 14065:2013 section 7.3)

The verification body shall ensure it has the express consent of the aeroplane operator prior to submission of the Verified Emissions Report, the Emissions Unit Cancellation Report where applicable, and the Verification Report to the State. The mechanism for authorizing this consent shall be specified in the contract between the verification body and aeroplane operator.

2.11 Records (ISO 14065:2013 section 7.5)

The verification body shall keep records on the verification process for a minimum of ten years, including:

- a) client's Emissions Monitoring Plan, Emissions Report and Emissions Unit Cancellation Report where applicable;
- b) Verification Report and related internal documentation;
- c) identification of team members and criteria for selection of team; and
- d) working papers with data and information reviewed by the team in order to allow for an independent party to assess the quality of the verification activities and conformance with verification requirements.

2.12 Agreement (ISO 14065:2013 section 8.2.3)

The contract between verification body and aeroplane operator shall specify the conditions for verification by stating:

- a) scope of verification, verification objectives, level of assurance, materiality threshold and relevant verification standards (ISO 14065, ISO 14064-3, this Volume and the Environment Technical Manual);
- b) amount of time allocated for verification;
- c) flexibility to change time allocation if this proves necessary because of findings during the verification;
- d) conditions which have to be fulfilled to conduct the verification such as access to all relevant documentation, personnel and premises;
- e) requirement of the aeroplane operator to accept the audit as a potential witness audit by national accreditation body's assessors;
- f) requirement of the aeroplane 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 the State; and
- g) liability coverage.

3. VERIFICATION OF EMISSIONS REPORT AND EMISSIONS UNIT CANCELLATION REPORT

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

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

A reasonable level of assurance shall be required for all verifications under this Volume.

3.2 Objectives (ISO 14064-3:2006 section 4.3.2)

3.2.1 When conducting the verification of an Emissions Report, the verification body shall perform sufficient procedures to conclude whether:

- a) 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;
- b) the aeroplane operator has monitored, quantified and reported its emissions over the period of the Emissions Report in accordance with this Volume and the approved Emissions Monitoring Plan;
- c) the aeroplane operator has correctly applied the method of flight attribution documented in the approved Emissions Monitoring Plan and in accordance with Part II, Chapter 1 of this Volume, to ensure a correct attribution of leased aeroplane and international flights, as defined in Part II, Chapter 1, 1.1.2, operated by other aeroplane operators under the same corporate structure;
- d) the stated amount of emission reductions from the use of sustainable aviation fuels 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;
- e) the claimed batches of sustainable aviation fuels have not also been claimed by the aeroplane operator under any other voluntary or mandatory schemes it has participated in (where the emission reductions from sustainable aviation fuels may be claimed), during the current compliance period, as well as the compliance period immediately preceding it; and
- f) the aeroplane operator has monitored, calculated and reported its emission reductions associated from the use of sustainable aviation fuels over the period of the reporting period in accordance with this Volume.

3.2.2 When conducting the verification of an Emissions Unit Cancellation Report, the verification body shall perform sufficient procedures to conclude whether:

- a) the aeroplane operator has accurately reported cancellations of its CORSIA Eligible Emissions Unit in accordance with this Volume;
- b) the stated number of cancelled CORSIA Eligible Emissions Units is sufficient for meeting the aeroplane operator's final offsetting requirements associated with the relevant compliance period, after accounting for any claimed emission reductions from the use of sustainable aviation fuels, and the aeroplane operator can demonstrate sole right of use to such cancelled CORSIA Eligible Emissions Units; and
- c) the eligible emission units cancelled by the aeroplane operator to meet its offsetting requirements under this Volume have not been used by the aeroplane operator to offset any other emissions.

3.3 Scope (ISO 14064-3:2006 section 4.3.4)

3.3.1 When conducting the verification of an Emissions Report, the scope of the verification shall reflect the period of time and information covered by the Report and the sustainable aviation fuels claim(s) where applicable. This includes:

- a) CO₂ emissions from aeroplane fuel monitoring methods, calculated in accordance with Part II, Chapter 2, 2.2; and
- b) Emissions reductions from the use of sustainable aviation fuel(s).

3.3.2 The verification boundary associated with the review of the sustainable aviation fuel claim(s) in the Emissions Report shall include the following:

- a) Any internal aeroplane operator procedures for sustainable aviation fuels, including aeroplane operator controls to ensure the claimed sustainable aviation fuels satisfies the CORSIA Sustainability Criteria;
- b) Checks for double claiming are limited to the specific aeroplane operator. Any findings outside of this scope are not relevant for the verification statement, however they should still be included in the Verification Report for further consideration by the State;
- c) Assessment of verification risk with appropriate changes to the verification plan; and
- d) Assessment of whether there is sufficient access to relevant internal and external information to obtain sufficient confidence in each sustainable aviation fuel claim. Where evidence of the sustainability or the size of the sustainable aviation fuels claim is considered either inappropriate or insufficient, further information should be sought directly from the fuel producer with direct access facilitated through the aeroplane operator.

3.3.3 When conducting the verification of an Emissions Unit Cancellation Report, the scope of the verification shall reflect the period of time and information covered by the Report and the verification body shall confirm that the cancelled eligible emission units used to meet the aeroplane operator's offsetting requirements under this Volume have not been used to offset any other emissions.

3.4 Materiality (ISO 14064-3:2006 section 4.3.5)

3.3.1 When conducting the verification of an Emissions Report, the verification body shall apply the following materiality thresholds:

- a) of 2 per cent for aeroplane operators with annual emissions on international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1, above 500 000 tonnes; and
- b) of 5 per cent for aeroplane operators with annual emissions on international flights, as defined in Part II, Chapter 1, 1.1.2 and Part II, Chapter 2, 2.1, equal or less than 500 000 tonnes of CO₂.

3.3.2 When conducting the verification of an Emissions Report, the over and understatement in 3.3.1 shall be allowed to balance out in both cases.

3.5 General (ISO 14064-3:2006 section 4.4.1)

Prior to the development of the verification approach, the verification body shall assess the risk of misstatements and non-conformities and their likelihood of a material effect on the basis of a strategic analysis of the aeroplane operator's

greenhouse gas emissions information⁸. Depending on the information obtained during the verification, the verification body shall revise the risk assessment and modify or repeat the verification activities to be performed.

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

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

3.6.2 The verification plan shall include the following:

- a) verification team members, roles, responsibilities and qualifications;
- b) any external resources required;
- c) schedule of verification activities; and
- d) sampling plan, including the processes, controls and information to be verified and details of the risk assessment conducted to identify these.

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

3.7.1 The Emissions Report sampling plan shall include the following:

- a) number and type of records and evidence to be examined;
- b) methodology used to determine a representative sample; and
- c) justification for the selected methodology.

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

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

3.8.1 The verification team shall confirm that the Emissions Report data has been collected in accordance with the approved Emissions Monitoring Plan and monitoring requirements specified in this Volume.

3.8.2 In accordance with the Emissions Report sampling plan, the verification body shall carry out substantive data testing consisting of analytical procedures and data verification to assess the plausibility and completeness of data. The verification team shall, 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.

3.8.3 Depending on the outcome of Emissions Report data testing and assessment, the assessment of risk, verification and sampling plans shall be amended, where necessary.

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

⁸ 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).

3.9.1 The verification body shall 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 aeroplane operator and State.

3.9.2 The scope of the independent review includes the complete verification process and shall be recorded in the internal verification documentation.

3.9.3 The independent review shall be performed to ensure that the verification process has been conducted in accordance with ISO 14065:2013, ISO 14064-3:2006 and this Volume, and that the evidence gathered is appropriate and sufficient to enable the verification body to issue a Verification Report with reasonable assurance.

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

3.10.1 The verification body shall submit a copy of the Verification Report to the aeroplane operator. Upon authorization by the aeroplane operator, the verification body shall forward a copy of the Verification Report together with the Emissions Report, the Emissions Unit Cancellation Report, or both, to the State. The Verification Report shall include:

- a) names of the verification body and verification team members
- b) time allocation (including any revisions and dates);
- c) scope of the verification;
- d) main results of impartiality and avoidance of conflict of interest assessment;
- e) criteria against which the Emissions Report was verified;
- f) aeroplane operator information and data used by the verification body to cross-check data and carry out other verification activities;
- g) main results of the strategic analysis and assessment of risk;
- h) 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;
- i) description of data sampling and testing conducted, including records or evidence sampled, sample size, and sampling method(s) used;
- j) the results of all data sampling and testing, including cross-checks;
- k) compliance with the Emissions Monitoring Plan;
- l) any non-compliances of the Emissions Monitoring Plan with this Volume;
- m) non-conformities and misstatements identified (including a description of how these have been resolved);
- n) conclusions on data quality and materiality;
- o) conclusions on the verification of the Emissions Report;
- p) conclusions on the verification of the Emissions Unit Cancellation Report;

- q) justifications for the verification opinion made by the verification body;
- r) results of the independent review and the name of the independent reviewer; and
- s) concluding verification statement.

3.10.2 When conducting the verification of an Emissions Unit Cancellation Report, only 3.10.1 (a), (b), (c), (d), (f), (g), (h), (m), (p), (q), (r) and (s) shall be applicable.

3.10.3 The verification body shall provide a conclusion on each of the verification objectives listed in 3.1, as applicable, in the concluding verification statement.

3.10.4 When conducting the verification of an Emissions Report or an Emissions Unit Cancellation Report, the verification body shall 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 shall 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 shall be 'verified as not satisfactory'.

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

3.11.1 On request of the State, the verification body shall disclose the internal verification documentation on a confidential basis to the State.

3.11.2 Where issues that may render a previously issued Verification Statement invalid or inaccurate are brought to the attention of the verification body, then it shall notify the State.

Attachment A – Attribution processes

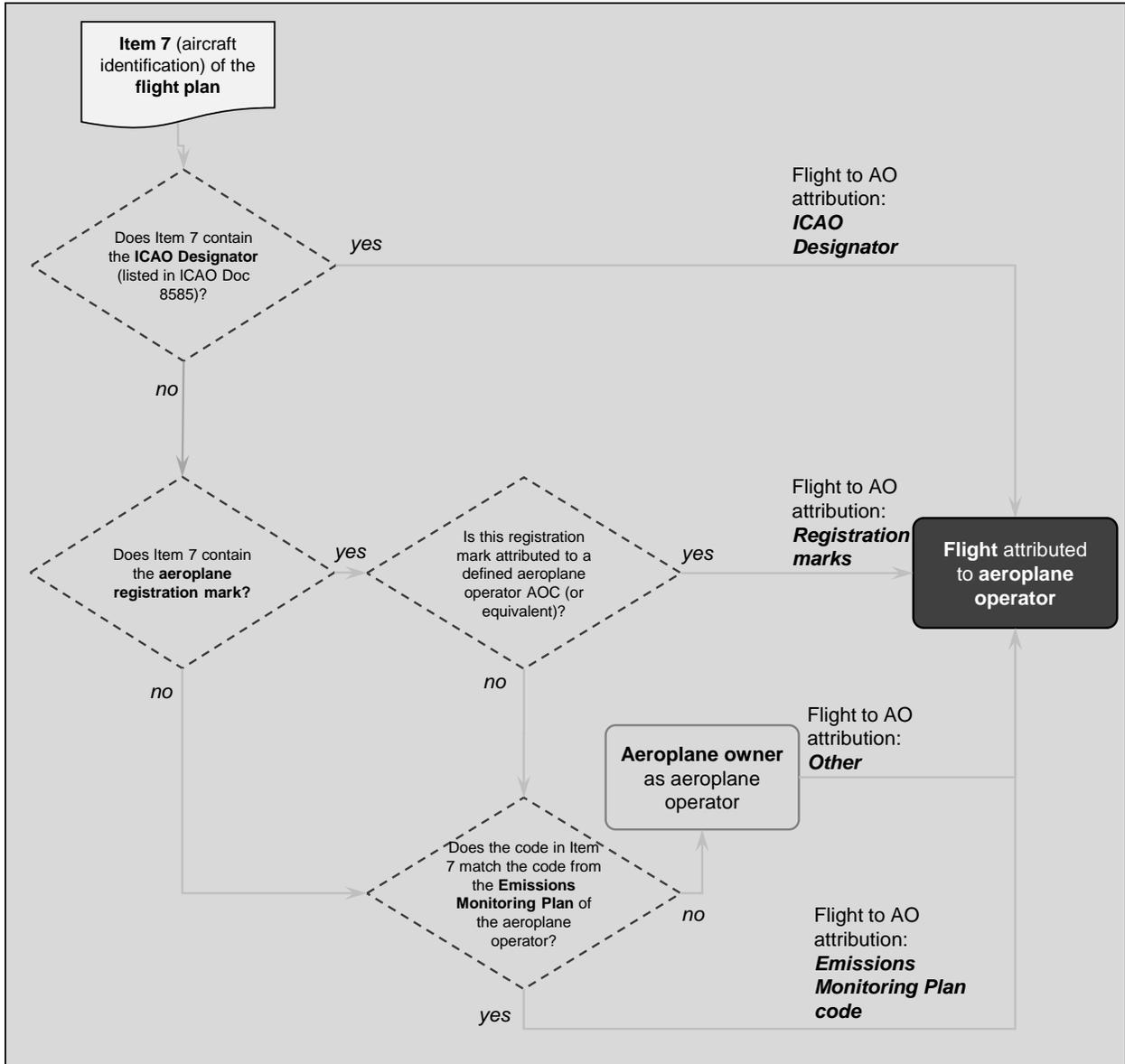


FIGURE A-1 Process for attribution of a flight to an aeroplane operator

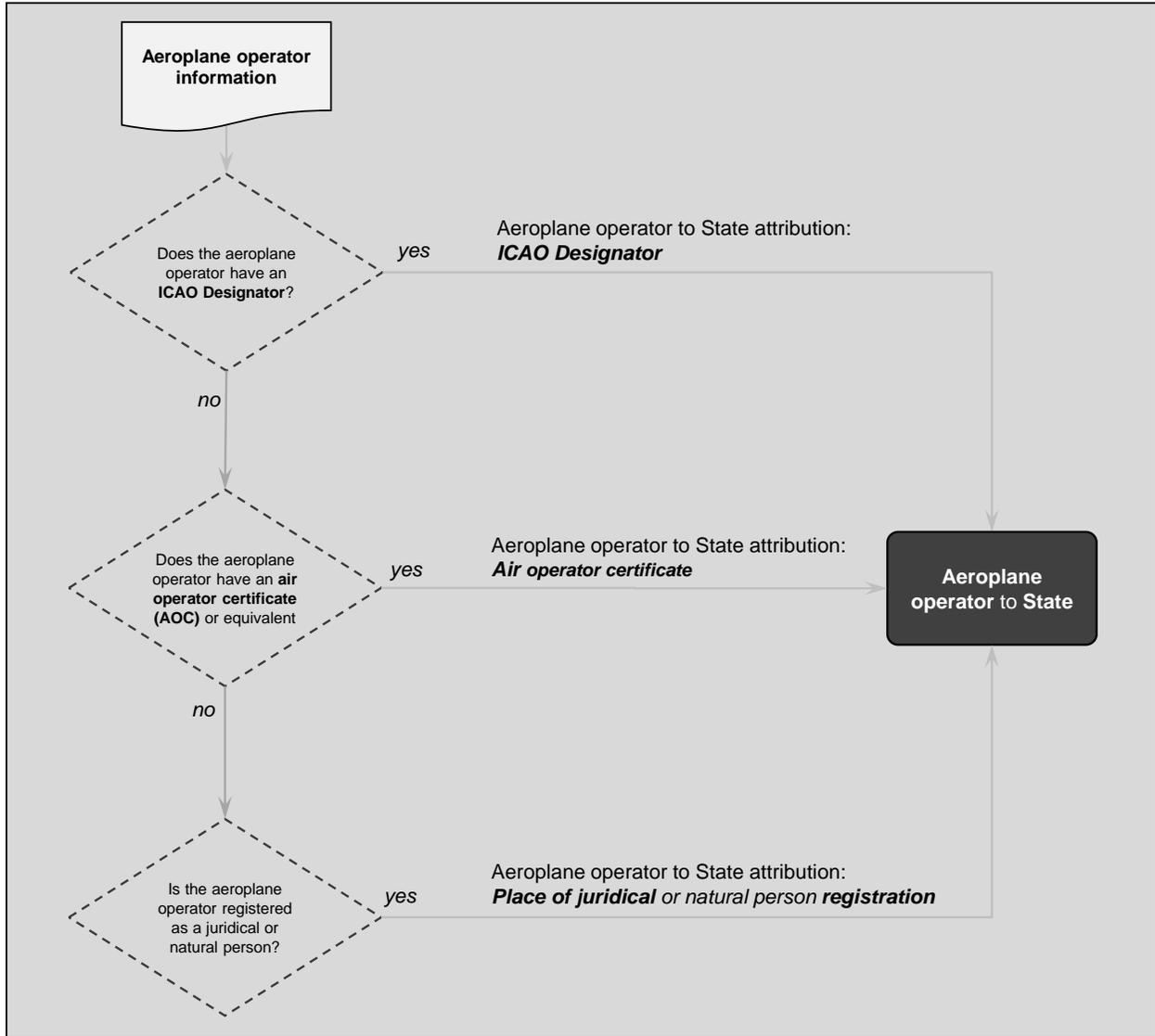


FIGURE A-2 Process for attribution of an aeroplane operator to a State

Attachment B – Applicability of the MRV requirements to international flights

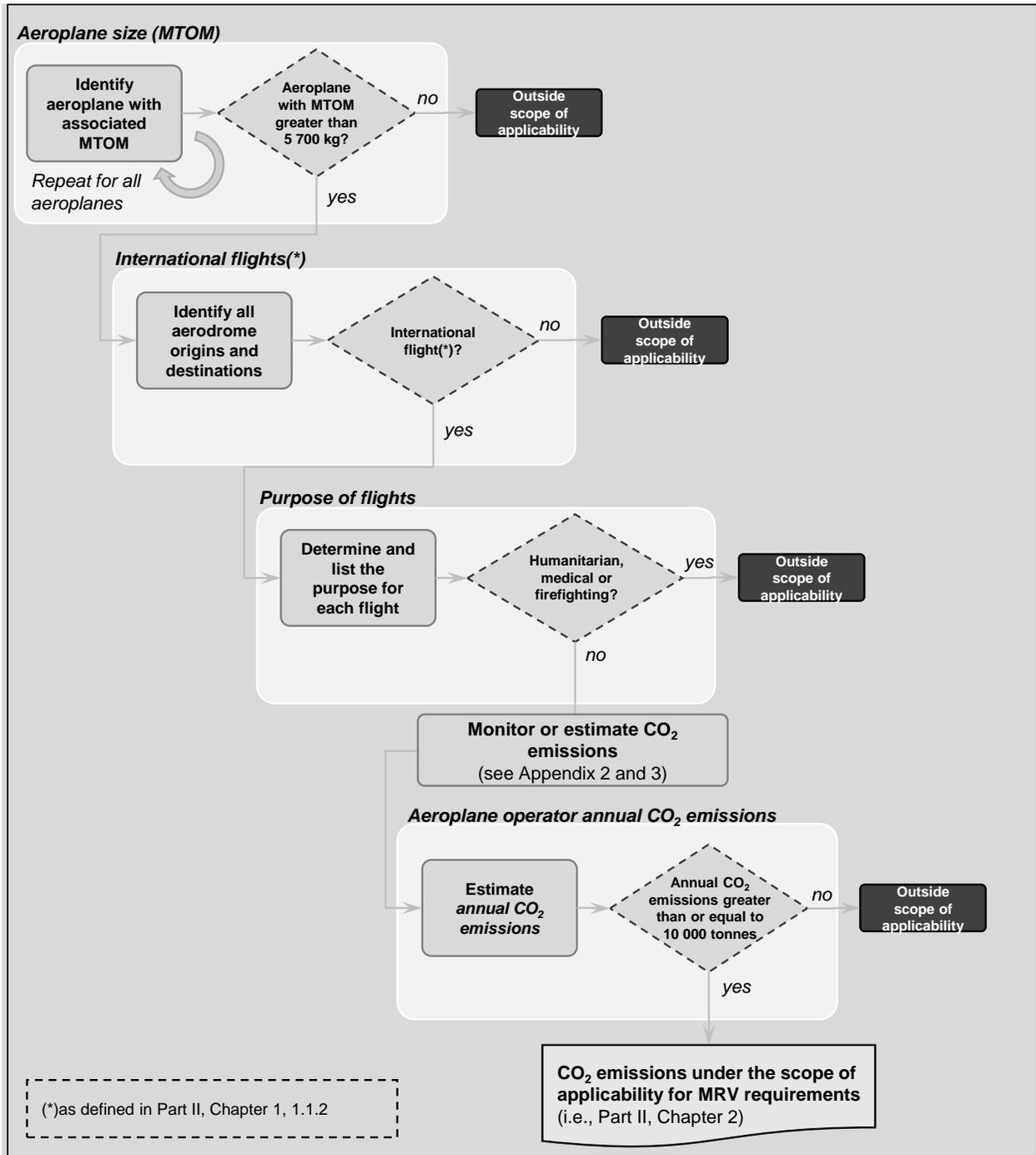


FIGURE B-1: Determination of the applicability of Part II, Chapter 2 to international flights, as defined in Part II, Chapter 1, 1.1.2 (for MRV requirements).

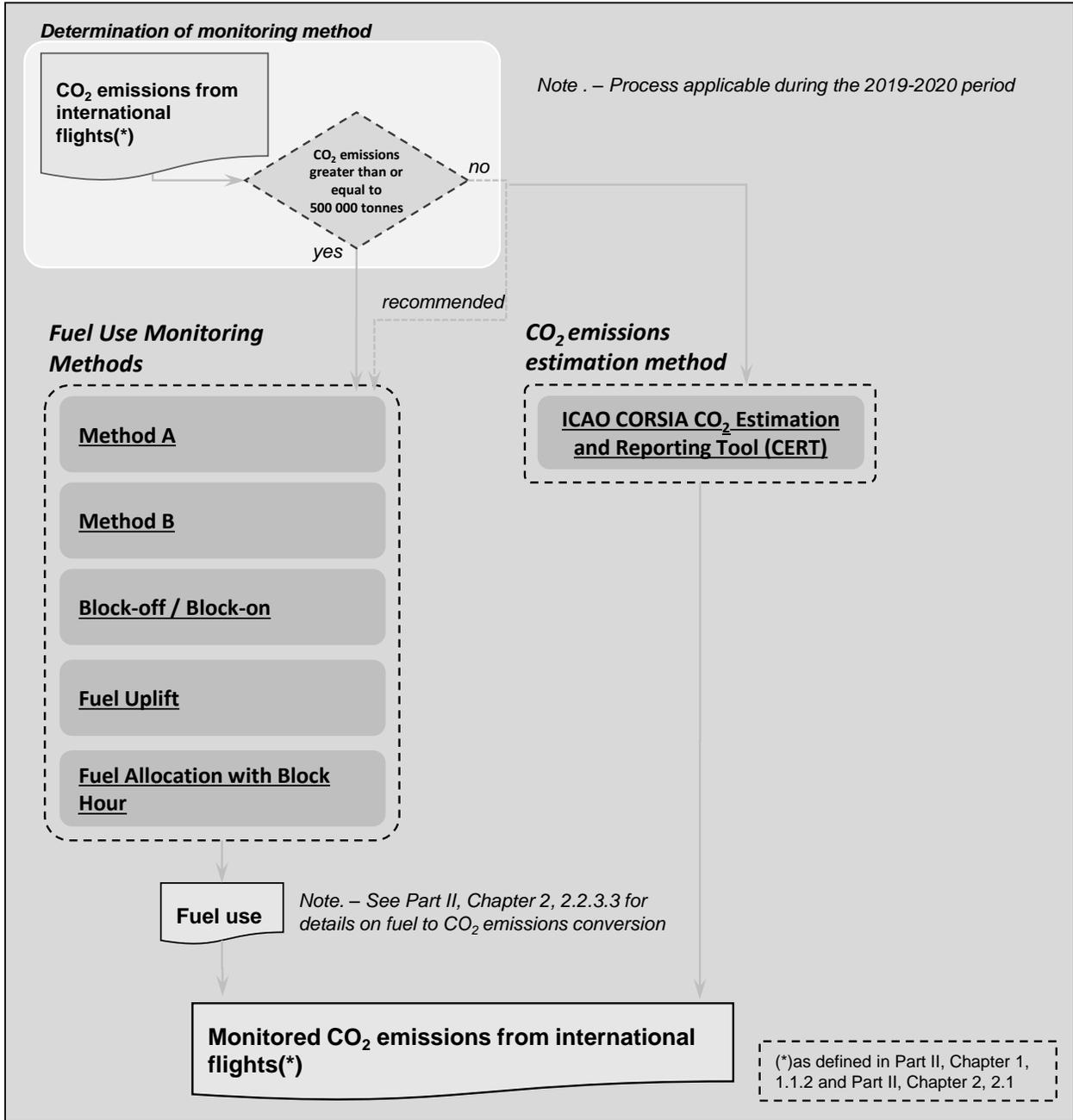


FIGURE B-2: Determination of eligible Fuel Use Monitoring Methods during the 2019-2020 period

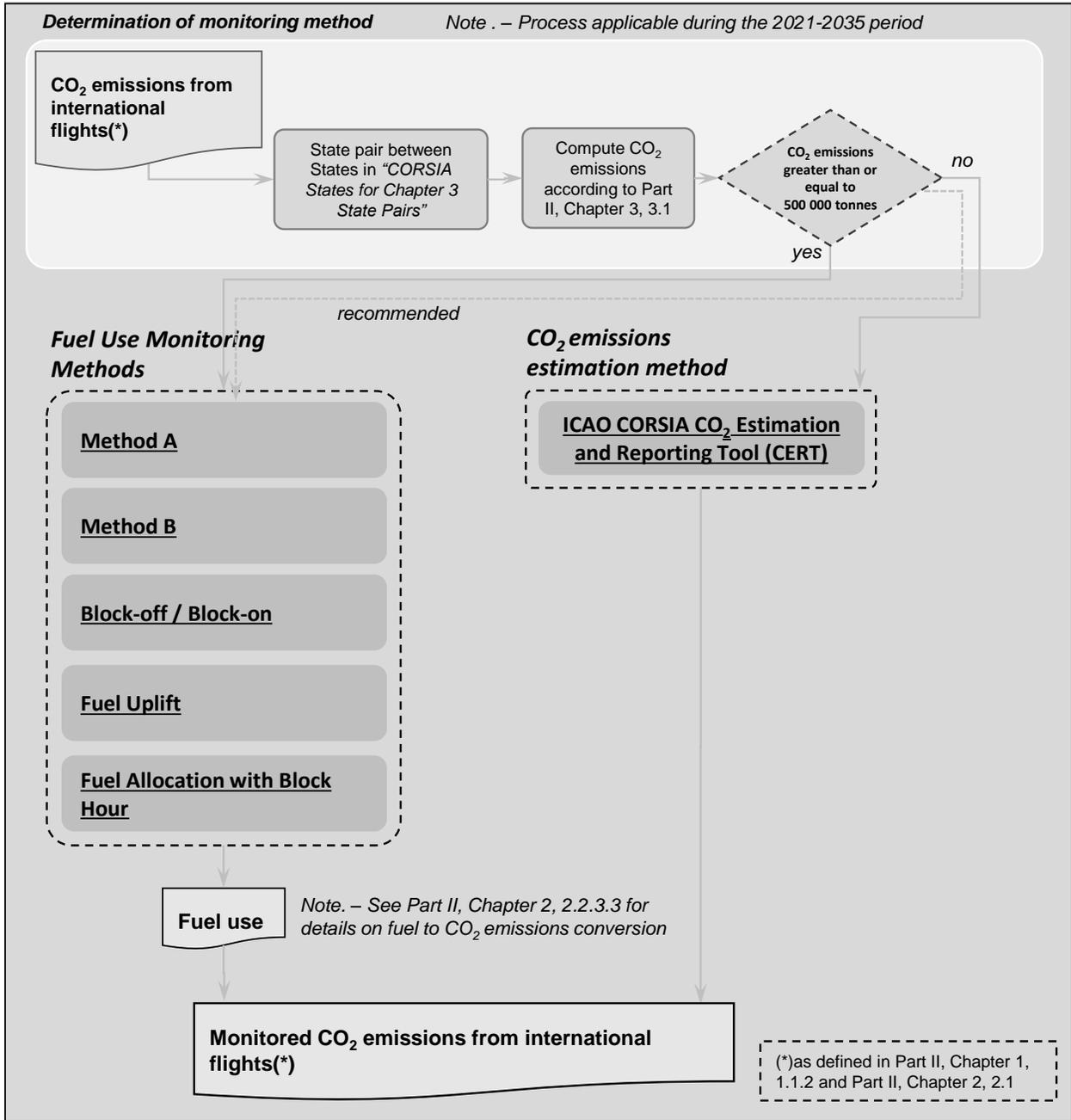


FIGURE B-3: Determination of eligible Fuel Use Monitoring Methods during the compliance periods (2021-2035)

Attachment C - Processes for fuel use monitoring

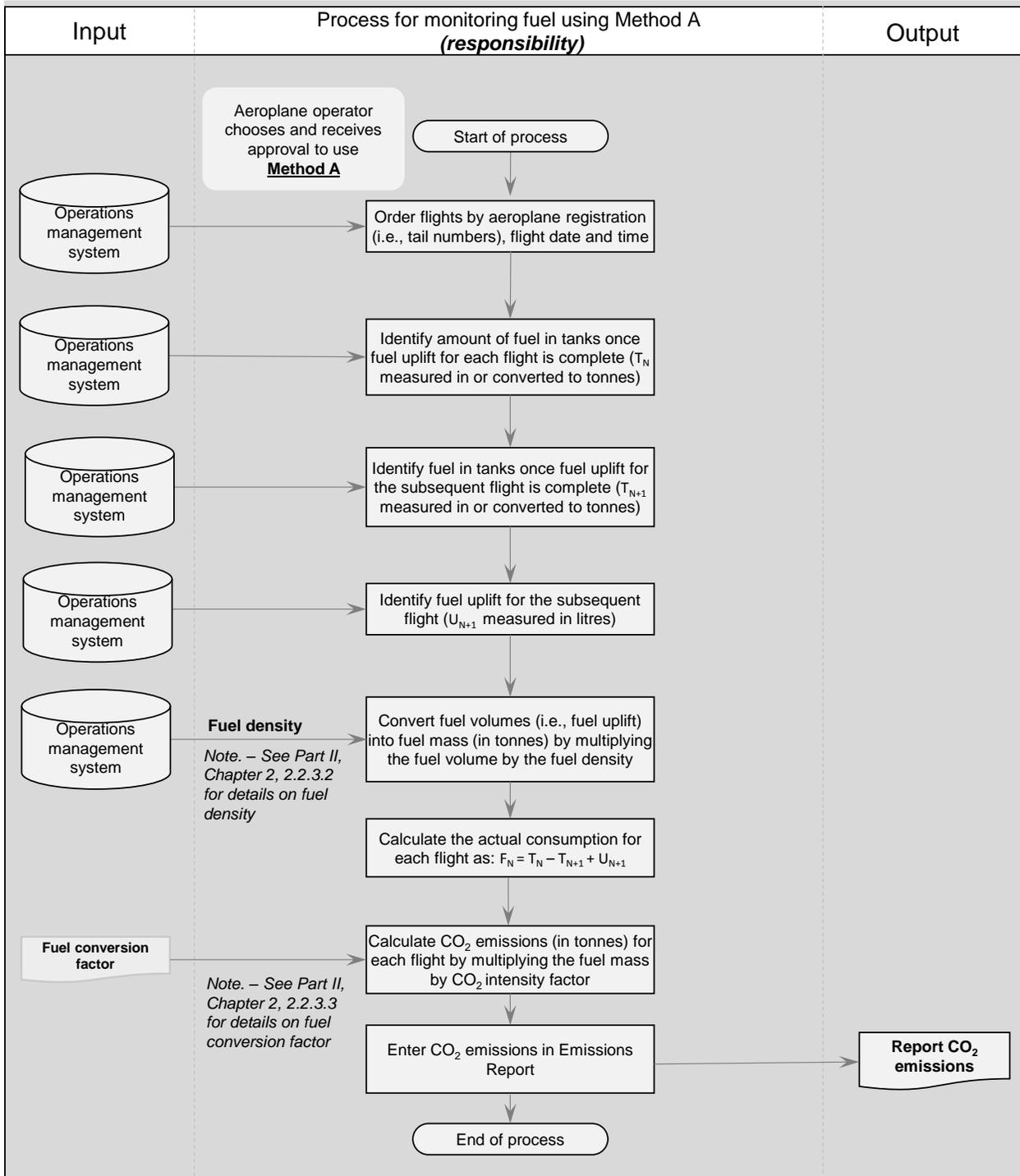


FIGURE C-1: Monitoring fuel use by flight using Method A

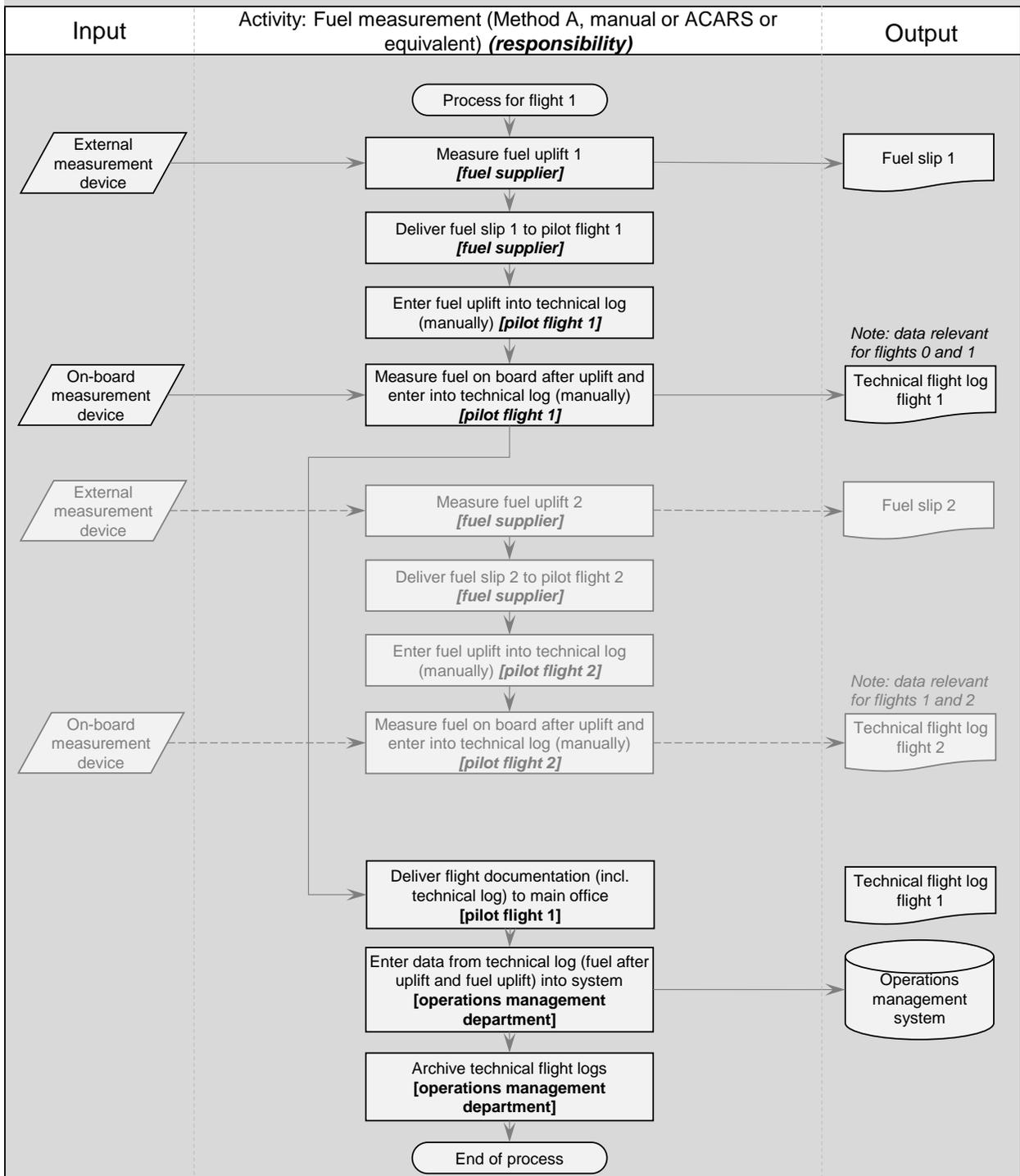


FIGURE C-2: Collection of required data to implement Method A with fuel uplift from fuel supplier

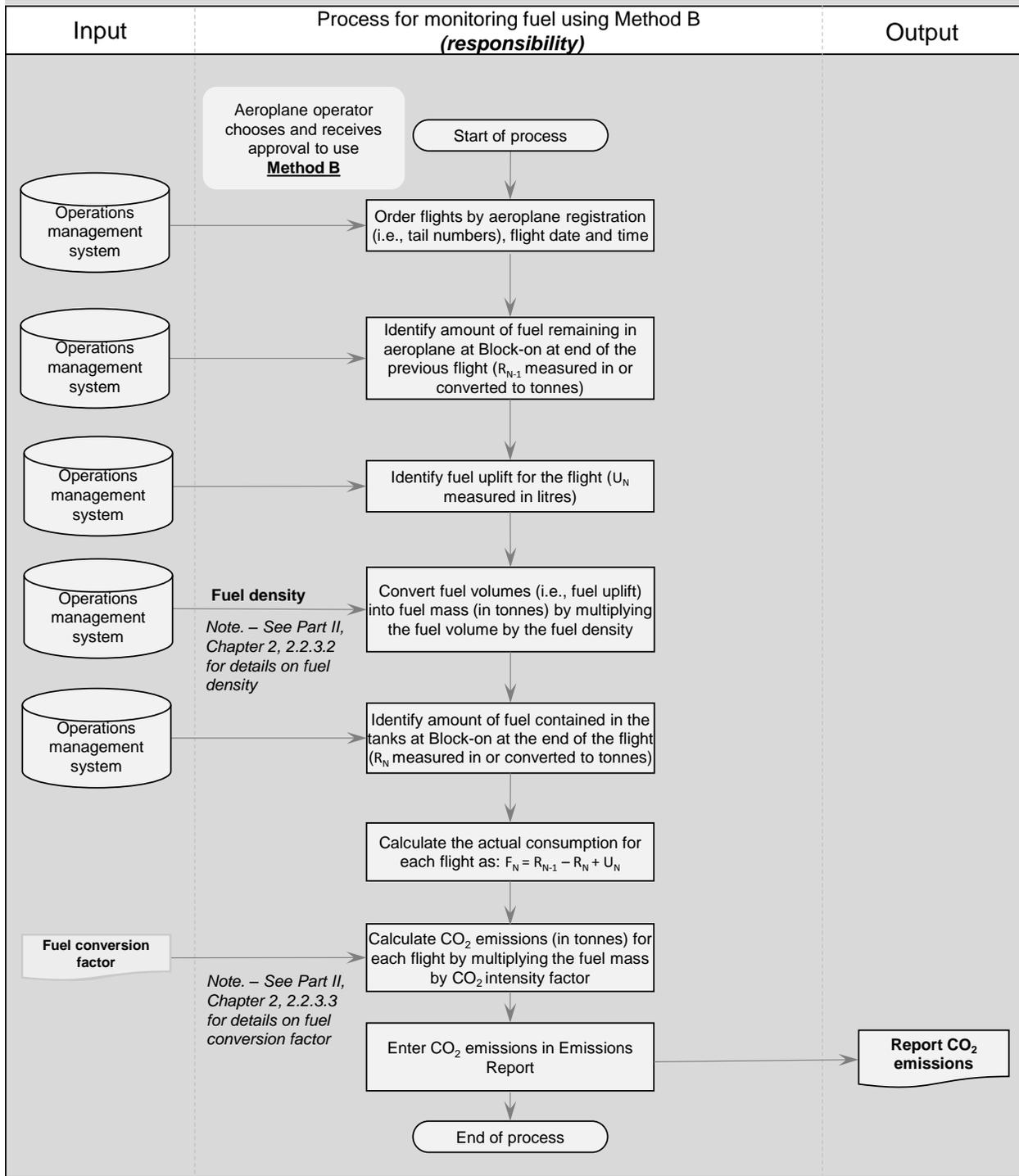


FIGURE C-3: Monitoring fuel use by flight using Method B

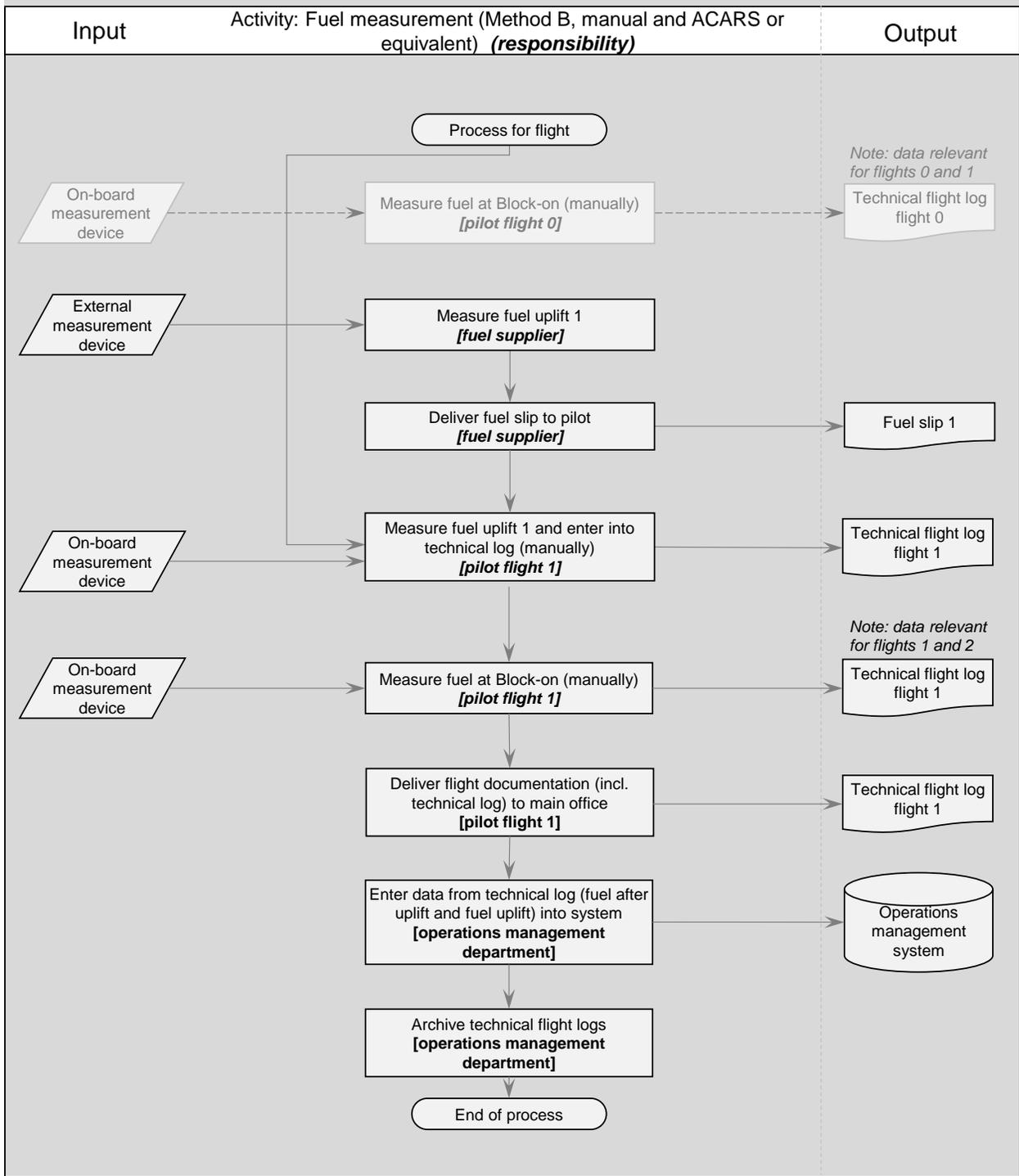


FIGURE C-4: Collection of required data to implement Method B with fuel uplift (manual process)

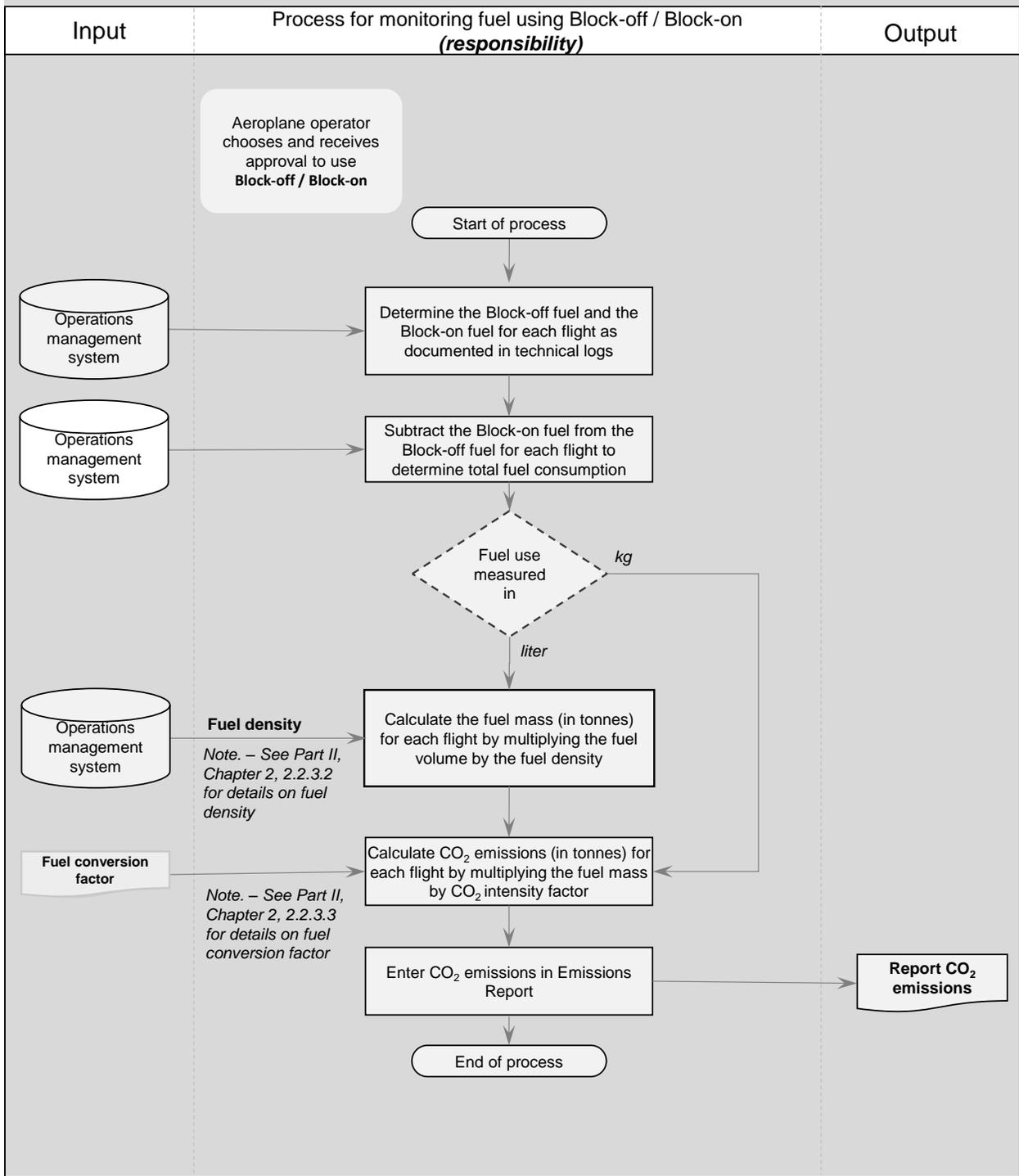


FIGURE C-5: Monitoring fuel use by flight using Block-off / Block-on

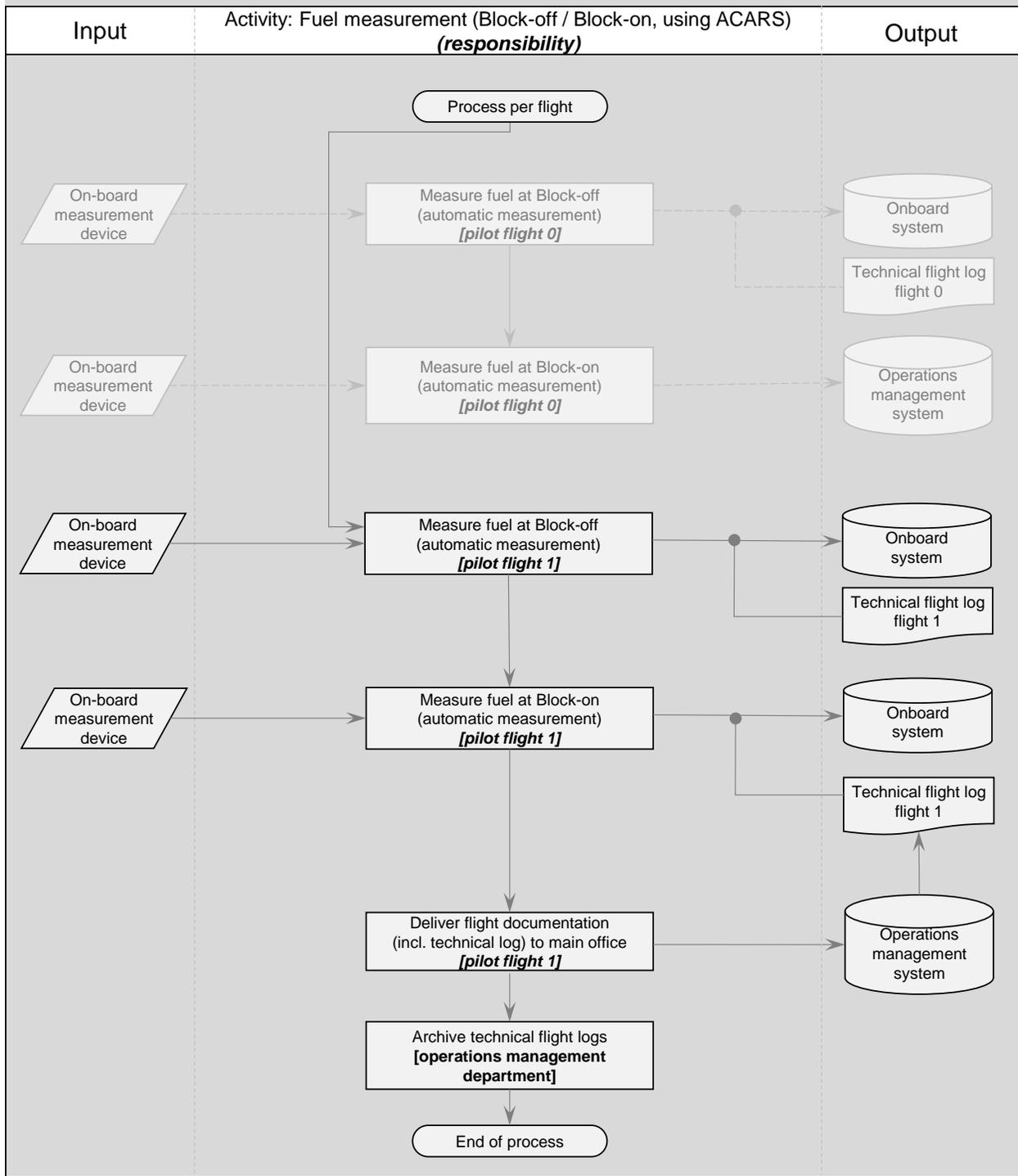


FIGURE C-6: Collection of required data to implement Block-off / Block-on

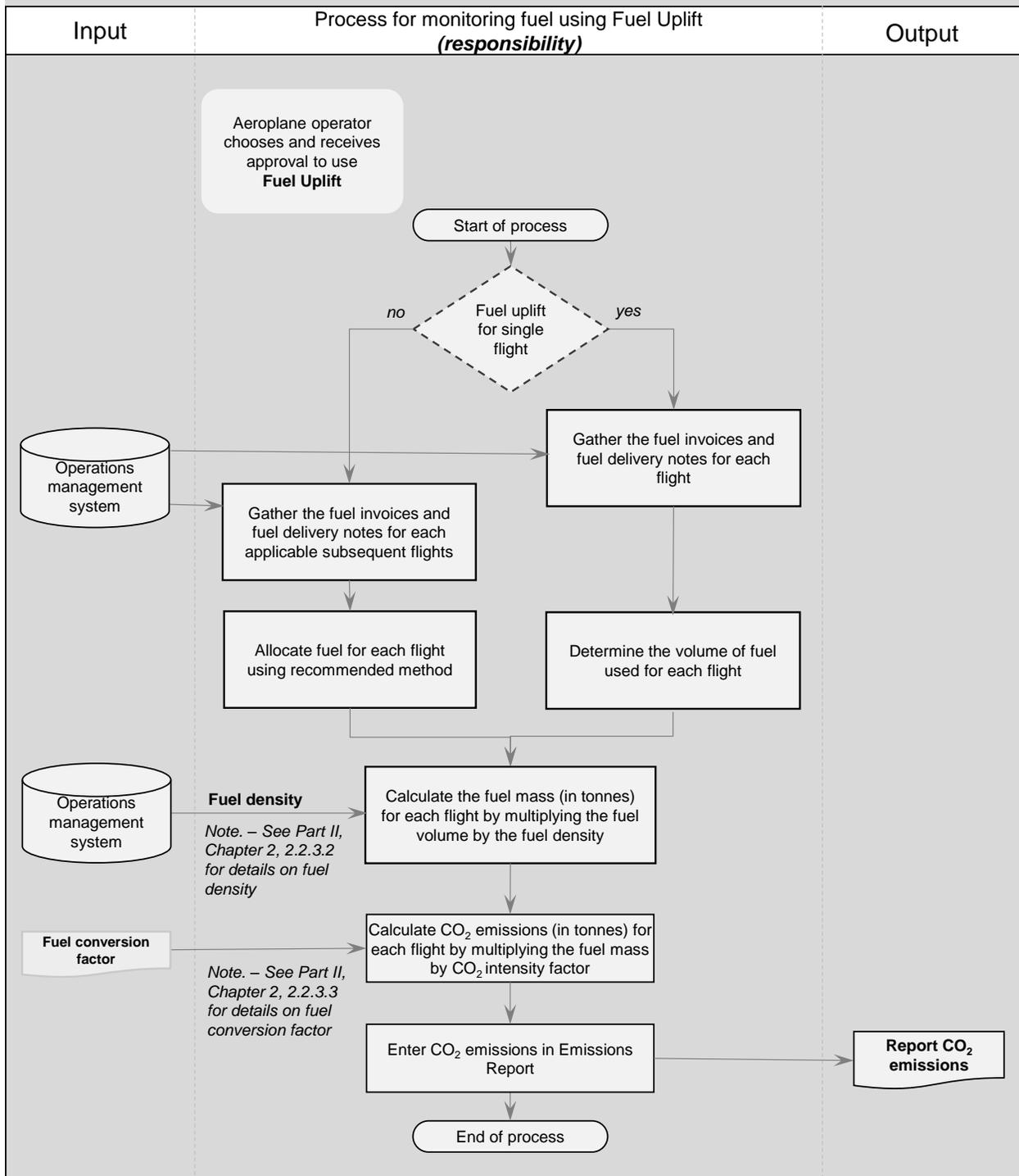


FIGURE C-7: Monitoring fuel use by flight using Fuel Uplift

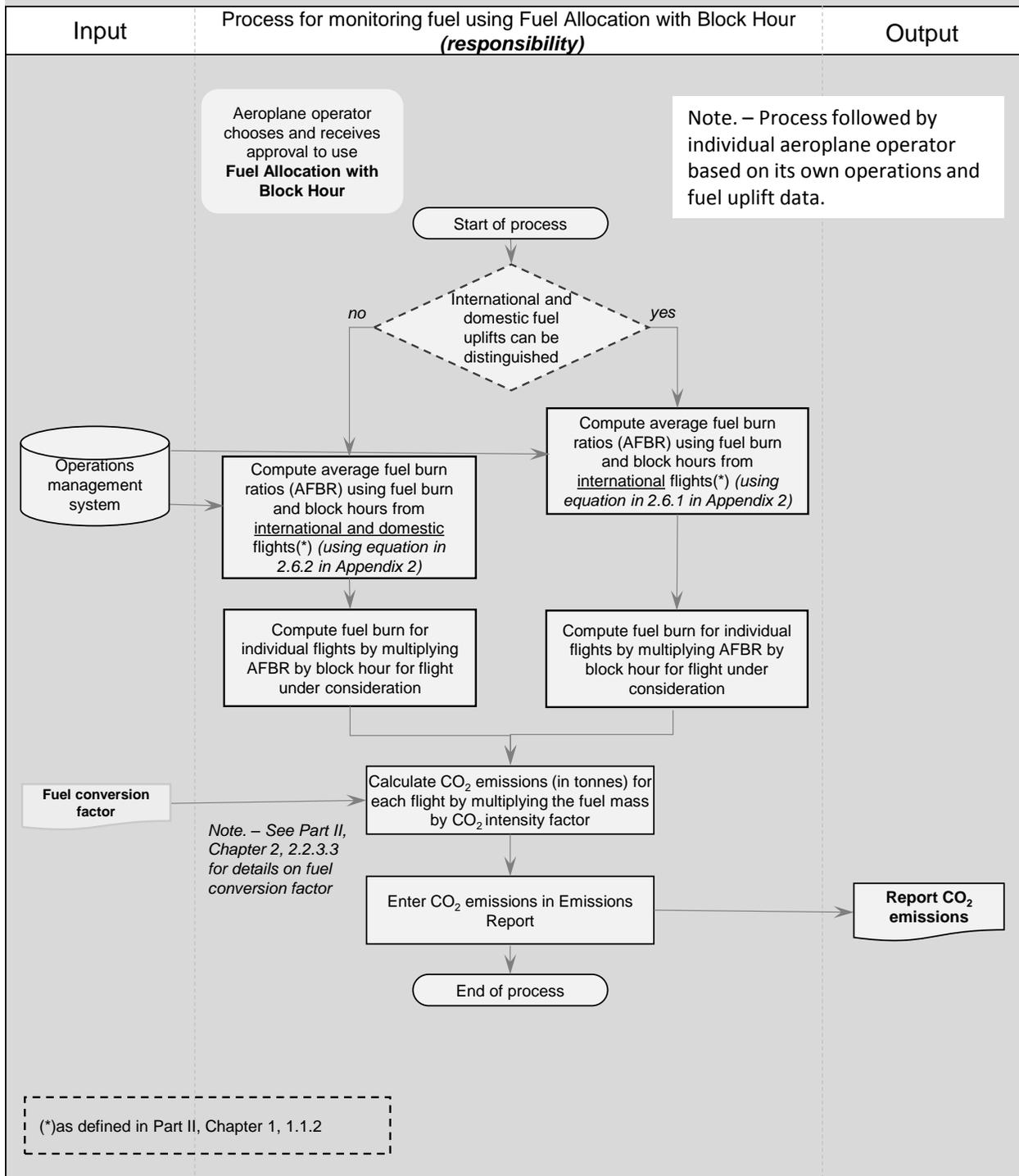


FIGURE C-8: Monitoring fuel use by flight using Fuel Allocation with Block Hour

ATTACHMENT B to State letter AN 1/17.14 – 17/129

RESPONSE FORM TO BE COMPLETED AND RETURNED TO ICAO TOGETHER WITH ANY COMMENTS YOU MAY HAVE ON THE PROPOSED AMENDMENTS

To: The Secretary General
 International Civil Aviation Organization
 999 Robert Bourassa Boulevard
 Montreal, Quebec
 Canada, H3C 5H7
 Email: officeenv@icao.int

(State) _____

Please make a checkmark (✓) against one option for each amendment. If you choose options “agreement with comments” or “disagreement with comments”, **please provide your comments on separate sheets.**

	<i>Agreement without comments</i>	<i>Agreement with comments*</i>	<i>Disagreement without comments</i>	<i>Disagreement with comments</i>	<i>No position</i>
Amendment to Annex 16 — <i>Environmental Protection, Volume IV — Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)</i> (Attachment A refers)					

*“Agreement with comments” indicates that your State or organization agrees with the intent and overall thrust of the amendment proposal; the comments themselves may include, as necessary, your reservations concerning certain parts of the proposal and/or offer an alternative proposal in this regard.

Signature: _____ Date: _____

ICAO CORSIA Implementation Elements

(referenced in Annex 16, Volume IV)

and

Supporting Documents

DRAFT First Edition

November 2017

*The draft ICAO CORSIA Implementation Elements and their associated supporting ICAO documents are currently under development, and are therefore considered as **DRAFT** material. The draft ICAO CORSIA Implementation Elements are directly referenced in the proposed First Edition of Annex 16, Volume IV – CORSIA and are considered essential for the implementation.*

The work to finalize this draft material is ongoing by the ICAO Committee on Aviation Environmental Protection (CAEP) and remains subject to the approval of the ICAO Council. It is anticipated that the final Implementation Elements and Supporting Documents will be available by the relevant applicability dates of the proposed First Edition of Annex 16, Volume IV – CORSIA.

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DRAFT

1. INTRODUCTION

The ICAO CORSIA Implementation Elements are reflected in ICAO documents approved by the ICAO Council for publication. This publication will be made available on the ICAO CORSIA website. These ICAO documents are directly referenced in Annex 16 Volume IV and are essential for the implementation of the CORSIA.

Note. - 'Made available on the ICAO CORSIA website' means that the information specified will be made available, free of charge, on the ICAO CORSIA website, and presented in a way that facilitates access, navigation and readability. This includes; listing information alphabetically (e.g., by State, or Aeroplane Operators, Eligible Emissions Units as relevant), and explicitly noting where a State does not administer Operators with CORSIA offset requirements in a given compliance cycle.

The CORSIA Package (see Figure 1) contains various components:

1. Annex 16 Volume IV (Standard and Recommended Practices - SARPs);
2. Environmental Technical Manual Volume IV (Guidance Material);
3. ICAO CORSIA Implementation Elements (published on the ICAO CORSIA website);
4. Supporting Documents (Technical Information and ICAO Processes to maintain the ICAO CORSIA Implementation Elements).

This document focuses on the structure and content of the 'ICAO CORSIA Implementation Elements' along with the 'Supporting Documents' (see red box in Figure 1). These documents provide critical material needed to implement the CORSIA Package. Where CORSIA Implementation Elements are currently available, they have been included in the relevant section of this document. The Supporting Documents are expected to evolve over time where content will be added and updated to reflect the latest approved processes and technical information.

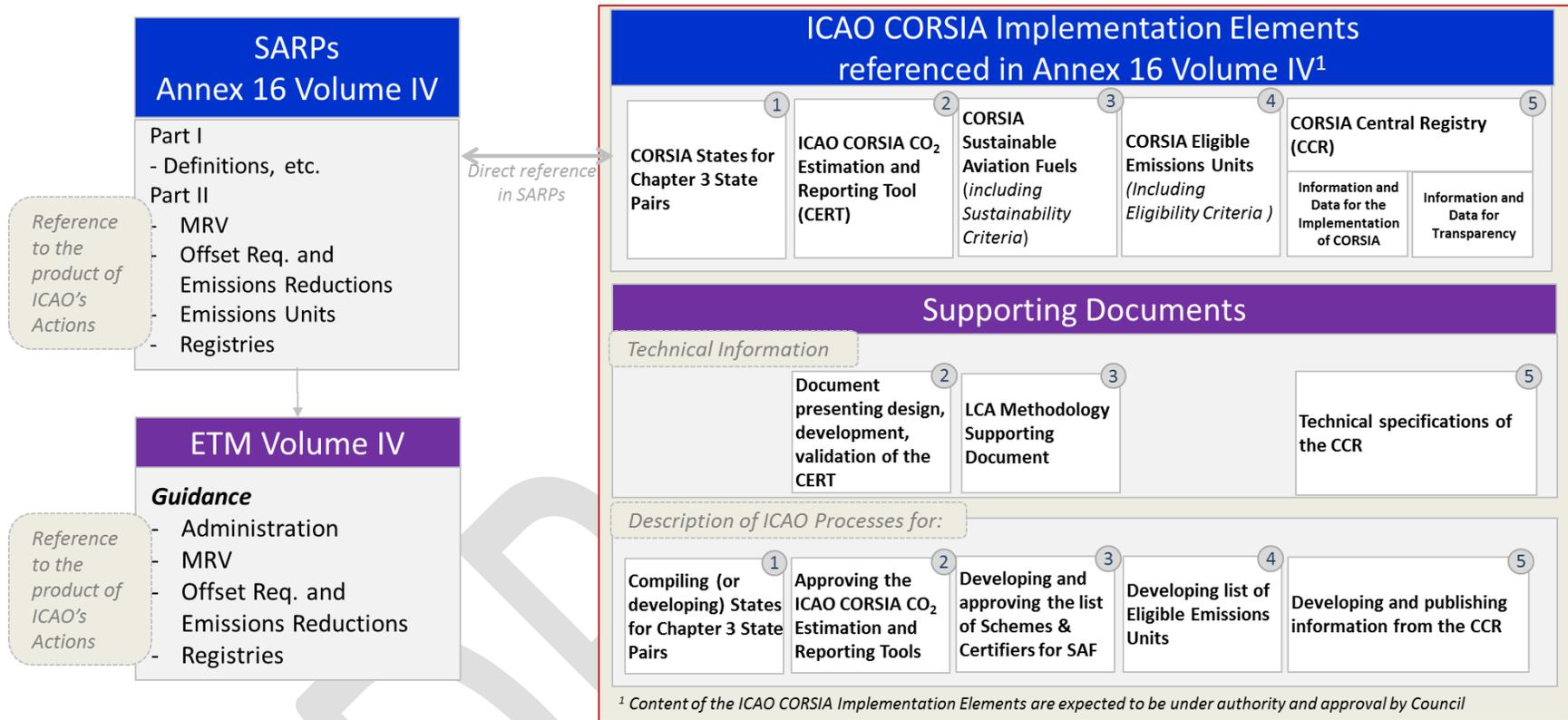


Figure 1 – CORSIA Package containing various components including the *Annex 16 Volume IV (SARPs)*, *ETM*, *ICAO CORSIA Implementation Elements* and *Supporting Documents*

2. ICAO CORSIA IMPLEMENTATION ELEMENTS

This section provides an overview of the structure and content of the five ICAO CORSIA Implementation Elements. The titles of the ICAO documents, and the associated ICAO CORSIA webpages where the Implementation Elements are expected to be published, are those referenced in the relevant parts of ICAO Annex 16 Volume IV. The Appendix to this document provides an example of how the Implementation Elements could be presented on a webpage. The ICAO CORSIA Implementation Elements are:

1. CORSIA States for Chapter 3 State Pairs
2. ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)
3. CORSIA Sustainable Aviation Fuels
4. CORSIA Eligible Emissions Units
5. CORSIA Central Registry (CCR)

The five ICAO CORSIA Implementation Elements are reflected in fourteen ICAO documents referenced in Volume IV of Annex 16 and are material approved by the ICAO Council for publication by ICAO to support this Volume. These ICAO documents are available on the ICAO CORSIA website and may only be amended by the ICAO Council:

1. CORSIA States for Chapter 3 State Pairs
 - **CORSIA States for Chapter 3 State Pairs**
2. ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)
 - **ICAO CORSIA CO₂ Estimation and Reporting Tool**
3. CORSIA Sustainable Aviation Fuels
 - **CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes**
 - **CORSIA Approved Sustainability Certification Schemes**
 - **CORSIA Sustainability Criteria for Sustainable Aviation Fuels**
 - **CORSIA Default Life Cycle Emissions Values for Sustainable Aviation Fuels**
 - **CORSIA Methodology for Calculating Actual Life Cycle Emissions Values**
4. CORSIA Eligible Emissions Units
 - **CORSIA Eligible Emissions Units**
 - **CORSIA Emissions Unit Eligibility Criteria**
5. CORSIA Central Registry (CCR)
 - **CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA**
 - **CORSIA Aeroplane Operator to State Attributions**
 - **CORSIA 2020 Emissions**
 - **CORSIA Annual Sector's Growth Factor (SGF)**
 - **CORSIA Central Registry (CCR): Information and Data for Transparency**

2.1 CORSIA States for Chapter 3 State Pairs

This ICAO CORSIA Implementation Element is reflected in ICAO document entitled “**CORSIA States for Chapter 3 State Pairs**” referenced in ICAO Annex 16 Volume IV, Part II, Chapter 3, Sections 3.1 and 3.2, and Appendix 1.

It provides information on those States participating in CORSIA that define the State pairs with offsetting requirements for the current year. This is critical information required by Aeroplane Operators to determine the applicability scope of the CORSIA CO₂ offsetting requirements.

The information will include:

1. The States participating in CORSIA that define the State pairs with offsetting requirements for a given year. This will include references to the source of the information (e.g., letter from the State).
2. Information on the 2018 International RTK list per States, and a list of Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs).

Note: The State pairs subject to offset requirements (i.e., aerodrome to aerodrome pairs and State to State pairs) in a given year will be embedded in the CORSIA CO₂ Estimation and Reporting Tool (CERT). This will facilitate the filtering of international State pairs that are subject to both MRV and offsetting requirements versus State pairs that are subject to MRV requirements only.

Archived information that defined ‘CORSIA States for Chapter 3 State Pairs’ in previous years will also be provided.

2.2 ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)

This ICAO CORSIA Implementation Element is reflected in ICAO document entitled “**ICAO CORSIA CO₂ Estimation and Reporting Tool**” referenced in ICAO Annex 16 Volume IV Appendix 3.

The CERT tool supports Aeroplane Operators in assessing their eligibility to use fuel burn monitoring methods in support of their Emissions Monitoring Plan (e.g., CO₂ emissions threshold requirements); assessing whether or not an Aeroplane Operator is within the applicability scope of the Chapter 2 MRV requirements; and in filling any CO₂ emissions data gaps. It also helps Aeroplane Operators in fulfilling their monitoring and reporting requirements by populating the standardized Emissions Monitoring Plan and Emissions Report templates in Appendix 1 of the Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

The information will include:

1. Technical details on the development and use of the ICAO CORSIA CERT;
2. Access to the version of the ICAO CORSIA CERT for the current year which can be downloaded;
3. Access to the standardized Emissions Monitoring Plan and Emissions Report templates; and
4. Contact information where the ICAO CORSIA CERT Users can report issues and request support.

Archived information on past versions of the ICAO CORSIA CERT and Templates will also be provided.

2.3 CORSIA Sustainable Aviation Fuels

This ICAO CORSIA Implementation Element consists of two sub-elements and is reflected in five ICAO documents referenced in ICAO Annex 16 Volume IV, Chapters 2 and 3:

Sub-element 1: CORSIA Sustainable Aviation Fuels: Information on Sustainability Certification Schemes (SCS)

1. **CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes**
2. **CORSIA Approved Sustainability Certification Schemes**

Sub-element 2: CORSIA Sustainable Aviation Fuels: Information for Certification of Sustainable Aviation Fuels

3. **CORSIA Sustainability Criteria for Sustainable Aviation Fuels**
4. **CORSIA Default Life Cycle Emissions Values for Sustainable Aviation Fuels**
5. **CORSIA Methodology for Calculating Actual Life Cycle Emissions Values**

2.3.1 CORSIA Sustainable Aviation Fuels: Information on Sustainability Certification Schemes

This sub-element provides information on Sustainability Certification Schemes (SCS) who can certify sustainable aviation fuel producers against the sustainability criteria and ensure that fuel producers calculate actual life cycle emissions values (if default values are not applied) using the agreed methodology.

The information will include:

1. The ICAO document entitled “**CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes**”. The eligibility framework and requirements for Sustainability Certification Schemes (SCS) includes but is not limited to assessing compliance with:
 - i. The CORSIA Sustainability Criteria;
 - ii. Audit quality and scheme governance system;
 - iii. Traceability requirements; and
 - iv. Transmission of information.
2. The ICAO document entitled, “**CORSIA Approved Sustainability Certification Schemes**” including the list of approved SCSs that meet the eligibility requirements and have been assessed in accordance with the eligibility framework.

2.3.1.1 CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes

2.3.1.2 CORSIA Approved Sustainability Certification Schemes

2.3.2 CORSIA Sustainable Aviation Fuels: Information for Certification of Sustainable Aviation Fuels

This sub-element provides information on processes followed by Certifiers from approved CORSIA SCS. These certifiers approve sustainable aviation fuels against the sustainability criteria and can calculate actual life cycle emissions values using the agreed methodology, if default life cycle values are not applied.

The information will include:

1. Sustainability Criteria that sustainable aviation fuels will have to meet under CORSIA in order for Aeroplane Operators to claim for emissions reductions;
2. Approved default Life Cycle Emissions Values for sustainable aviation fuels;
3. LCA methodology to assess actual life cycle emissions values for sustainable aviation fuels;
4. LCA Methodology - Technical Report Requirements;
5. LCA Methodology - Feedstock Categories;
6. LCA Methodology - Adding New Default Life Cycle Values;
7. LCA Methodology - Low LUC Risk Land Management Practices; and
8. LCA Methodology - Landfill and Recycling Emissions Credits.

2.3.2.1 Acronyms

ATJ	= Alcohol-to-jet fuel
CO ₂	= Carbon dioxide
CO _{2e}	= Carbon dioxide equivalent
CAF	= Conventional aviation fuels (petroleum-based drop-in aviation fuels)
CH ₄	= Methane
ETM	= Environmental technical manual
FOG	= Fat, oil, and grease
FT	= Fischer-Tropsch
GHG	= Greenhouse gas
HEFA	= Hydroprocessed esters and fatty acids
ILUC	= Induced land use change
LCA	= Life cycle assessment
LMP	= Land management practices

LS _f	= Life cycle emissions factor for a sustainable aviation fuel in gCO ₂ /MJ
MSW	= Municipal Solid Waste
N ₂ O	= Nitrous oxide
PTWa	= Pump-to-wake
SAF	= Sustainable Aviation Fuel (drop-in aviation fuel that meets CORSIA sustainability criteria)
SIP	= Synthetic iso-paraffin
WTP	= Well-to-pump
WTWa	= Well-to-wake

2.3.2.2 CORSIA Sustainability Criteria for Sustainable Aviation Fuels

This ICAO document entitled, “**CORSIA Sustainability Criteria for Sustainable Aviation Fuels**” will include the criteria described in the table below.

Theme	Principle	Criteria
1. Greenhouse Gases (GHG)	Principle: Sustainable alternative jet fuel should generate lower carbon emissions than conventional kerosene on a life cycle basis.	Criterion 1: Sustainable alternative jet fuel shall achieve net greenhouse gas emissions reductions of at least 10% compared to fossil jet fuel on a life cycle basis.
2. Carbon stock	Principle: Sustainable alternative jet fuel should not be made from biomass obtained from land with high carbon stock.	<p>Criterion 1: Sustainable alternative jet fuel shall not be made from biomass obtained from land converted after 1 January 2008 that was primary forest, wetlands, or peat lands and/or contributes to degradation of the carbon stock in primary forests, wetlands, or peat lands as these lands all have high carbon stocks.</p> <p>Criterion 2: In the event of land use conversion after 1 January 2008, as defined based on IPCC land categories, direct land use change (DLUC) emissions shall be calculated. If DLUC greenhouse gas emissions exceed the default induced land use change (ILUC) value, the DLUC value shall replace the default ILUC value.</p>

2.3.2.2.1 Guidance on the application of sustainability criteria

- Compliance with Themes 1 and 2 is granted on the basis of independent attestation by CORSIA approved Sustainability Certification Schemes;*
- Work on other themes such as Water; Soil; Air; Conservation; Waste and Chemicals; Human and labour rights; Land use rights and land use; Water use rights; Local and social development; and Food security, and related criteria, and on the application of these criteria, is ongoing under the Committee on Aviation Environmental Protection (CAEP) and will be subject to approval by the Council by the end of the pilot phase;*
- CORSIA Sustainability Criteria for Sustainable Aviation Fuels do not set a precedent for, or prejudge the outcome of negotiations in other fora.*

2.3.2.3 CORSIA Default Life Cycle Emissions Values for Sustainable Aviation Fuels

This ICAO document entitled, “**CORSIA Default Life Cycle Emissions Values for Sustainable Aviation Fuels**” will include the Default Life Cycle Emissions Values (LS_f) described in the table below.

Fuel Conversion Process	Fuel Feedstock	Core LCA Value	ILUC LCA Value	LSf (gCO ₂ e/MJ)
Fischer-Tropsch (FT)	Agricultural residues	7.7	0.0	7.7
	Forestry residues	8.3		8.3
	Municipal and solid waste (MSW), 0% non-biogenic carbon (NBC)	5.2		5.2
	Municipal solid waste (MSW) (NBC given as a percentage of the non-biogenic carbon content)	NBC*170.5+5.2		NBC*170.5+5.2
Hydroprocessed esters and fatty acids (HEFA)	Tallow	22.5	0.0	22.5
	Used cooking oil	13.9		13.9
	Palm fatty acid distillate	20.7		20.7
	Corn oil	17.2		17.2
Alcohol (isobutanol) to jet (ATJ)	Agricultural residues	29.3	0.0	29.3
	Forestry residues	23.8		23.8

2.3.2.4 CORSIA Methodology for Calculating Actual Life Cycle Emissions Values

This ICAO document entitled, “**CORSIA Methodology for Calculating Actual Life Cycle Emissions Values**” will include the information below.

An Aeroplane Operator seeking benefits from the use of SAF in terms of reductions in CORSIA CO₂ offsetting requirements will have to provide documentation to their State on the life cycle emissions values (LS_f) and sustainability. An Aeroplane Operator will need to work with an SAF supplier to obtain this information.

1. An Aeroplane Operator may use an actual core life cycle value –described in paragraphs 3 and 6—as part of an accepted fuel sustainability certification process if a fuel producer can demonstrate lower core life cycle emissions compared to the default core life cycle values provided in 2.3.2.2, or if a fuel producer has defined a new pathway that does not have a default core life cycle values. If the Aeroplane Operator chooses to use an actual core life cycle value, then the Aeroplane Operator shall select an eligible Sustainability Certification Scheme from 2.3.1.1 to ensure the analysis is in accordance to the LCA methodology defined below. The results of the actual core life cycle value analysis shall be added to the appropriate ILUC value from 2.3.2.2 to calculate the total Life Cycle Emissions Value (LSf). The SCS shall ensure that the methodology has been applied correctly and that relevant information on GHG emissions is transmitted through the chain of custody. SCS shall record detailed information about the calculation of actual values within their system and provide this information to ICAO on request.
2. If a fuel was produced from a feedstock that is defined as a waste, residue, or by-product

according to 2.3.2.5, then the actual core LCA value shall be the total LSf. If the feedstock is not a waste, residue, or by-product, then a default core LCA value and an ILUC value will need to be added to 2.3.2.2 before the fuel can be included in CORSIA. Information on how fuels can be added to 2.3.2.2 can be found in 2.3.2.6.

3. The system boundary of the core LCA value calculation shall include the full supply chain of SAF production and use. As such, emissions associated with the following life cycle stages of the SAF supply chain must be accounted for: (1) production at source (e.g., feedstock cultivation); (2) conditioning at source (e.g., feedstock harvesting, collection, and recovery); (3) feedstock processing and extraction; (4) feedstock transportation to processing and fuel production facilities; (5) feedstock-to-fuel conversion processes; (6) fuel transportation and distribution to the blend point; and (7) fuel combustion in an aircraft engine.
4. For life cycle stages 1-6 described in Paragraph 3, carbon dioxide equivalent (CO₂e) emissions of CH₄, N₂O and non-biogenic CO₂ from these activities shall be calculated on the basis of 100-year global warming potential (GWP). CO₂e values for CH₄ and N₂O shall be based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (28 and 265, respectively). Only non-biogenic CO₂ emissions from fuel combustion shall be included in the calculation of CO₂e emissions.
5. The functional unit for final LSf results shall be grams of CO₂e per megajoule of fuel produced and combusted in an aircraft engine, in terms of lower heating value (gCO₂e/MJjet).
6. The calculated LSf values shall include emissions generated during on-going operational activities (e.g., operation of a fuel production facility, feedstock cultivation), as well as emissions associated with the material and utility inputs to operational activities, such as processing chemicals, electricity, and natural gas. Emissions generated during one-time construction or manufacturing activities (e.g., fuel production facility construction, equipment manufacturing) shall not be included.
7. In many cases, the SAF supply chain of interest will result in the co-production of multiple commodities. These co-products may include non-SAF liquid fuels, chemicals, electricity, steam, hydrogen, and/or animal feed. Energy allocation shall be used to assign emissions burdens to all co-products in proportion to their contribution to the total energy content (measured as lower heating value) of the products and co-products. CO₂e emissions shall not be allocated to waste, residues and by-products that result from the SAF supply chain of interest.
8. SAF feedstocks can be broadly categorized into three groups - primary or co-products, by-products, and wastes and residues. Further information on how feedstocks are categorised into these group for the purposes of CORSIA can be found in 2.3.2.5..
9. Feedstocks that are “low risk” for land use change have been identified and assigned as having zero emissions from land use change. The low land use change risk feedstock list includes: (1) feedstocks that do not result in expansion of global agricultural land use for their production; (2) wastes, residues, and by-products (see 2.3.2.5); and (3) feedstocks that have yields per surface unit significantly higher than terrestrial crops (~ one order of magnitude higher) such as some algal feedstocks. The feedstocks in these three categories shall all receive an ILUC value of zero in the fourth column of the table in 2.3.2.2.
10. Aeroplane Operators may choose to capture the benefits of utilizing land use change-risk mitigation practices, (e.g., land management practices) to avoid ILUC emissions as part of an

accepted fuel sustainability certification process (see 2.3.1.1). Mitigation practices that avoid ILUC emissions and the requirements that shall be met to obtain these reductions can be found in 2.3.2.7. The ILUC value of zero shall be used in place of the default ILUC value to calculate total LSf. If the Aeroplane Operator chooses to claim emissions reductions from the implementation of land use change-risk mitigation practices, then the Aeroplane Operator shall select an eligible Sustainability Certification Scheme from 2.3.1.2 to provide documentation that the fuel was produced using land use change-risk mitigation practices according to 2.3.2.7.

11. Waste, residue, and by-product feedstocks are assumed to incur zero emissions during the feedstock production step of the lifecycle. Emissions generated during the collection, recovery, extraction, and processing of these wastes, residues, and by-products, however, shall be included (life cycle stages 2-7 described in paragraph 3).
12. Municipal Solid Waste (MSW) feedstocks may generate an avoided Landfill Emissions Credit (LEC) and/or a Recycling Emissions Credit (REC) for avoiding landfill methane emissions and/or displaced materials as a result of recycling of metals and high value plastics, respectively. Both the LEC and REC can be subtracted from the actual MSW LCA values to calculate total LSf. Third-party verified LEC and REC values will be applied for such calculation. If the Aeroplane Operator chooses to use a fuel produced from MSW that would generate LEC and/or REC, then the Aeroplane Operator shall select an eligible Sustainability Certification Scheme from 2.3.1.2 to conduct the analysis according to 2.3.2.8. The analysis shall be documented in a technical report fully citing the data sources, such that the results are replicable.

2.3.2.5 *LCA Methodology - Technical Report Requirements*

2.3.2.6 *LCA Methodology - Feedstock Categories*

2.3.2.7 *LCA Methodology - Adding New Default Life Cycle Values*

2.3.2.8 *LCA Methodology - Low LUC Risk Land Management Practices*

2.3.2.9 *LCA Methodology - Landfill and Recycling Emissions Credits*

2.4 CORSIA Eligible Emissions Units

This ICAO CORSIA Implementation Element is reflected in ICAO documents entitled “**CORSIA Eligible Emissions Units**” and “**CORSIA Emissions Unit Eligibility Criteria**” referenced in ICAO Annex 16 Volume IV, Chapter 4, Section 4.2.

It provides information on CORSIA Eligible Emissions Units which an Aeroplane Operator shall use to meet their CO₂ offsetting requirements.

The information will include:

1. List of approved CORSIA Eligible Emissions Units; and
2. The program design elements and criteria for CORSIA Eligible Emissions Units.

2.4.1 CORSIA Eligible Emissions Units

The ICAO document entitled, “**CORSIA Eligible Emissions Units**” will include the list of approved CORSIA Eligible Emissions Units.

Emissions Units	Programme	Type	...

2.4.2 CORSIA Emissions Unit Eligibility Criteria

The ICAO document entitled, “**CORSIA Emissions Unit Eligibility Criteria**” include information on the program design elements and criteria for CORSIA Eligible Emissions Units as described below:

Program Design Elements. At the program level, ICAO should ensure that eligible offset credit programs meet the following design elements:

1. **Clear Methodologies and Protocols, and their Development Process:** Programs should have qualification and quantification methodologies and protocols in place and available for use as well as a process for developing further methodologies and protocols. The existing methodologies and protocols as well as the process for developing further methodologies and protocols should be publicly disclosed.
2. **Scope Considerations:** Programs should define and publicly disclose the level at which activities are allowed under the program (e.g., project-based, program of activities, etc.) as well as the eligibility criteria for each type of offset activity (e.g., which sectors, project types, or geographic locations are covered).

3. **Offset Credit Issuance and Retirement Procedures:** Programs should have in place procedures for how offset credits are: (a) issued; (b) retired or cancelled; (c) subject to any discounting; and, (d) the length of the crediting period and whether that period is renewable. These procedures should be publicly disclosed.
4. **Identification and Tracking:** Programs should have in place procedures that ensure that: (a) units are tracked; (b) units are individually identified through serial numbers; (c) the registry is secure (i.e., robust security provisions are in place); and (d) units have clearly identified owners or holders (e.g., identification requirements of a registry). The program should also stipulate (e) to which, if any, other registries it is linked; and, (f) whether and which international data exchange standards the registry conforms with. All of the above should be publicly disclosed information.
5. **Legal Nature and Transfer of Units:** The program should define and ensure the underlying attributes and property aspects of a unit, and publicly disclose the process by which it does so.
6. **Validation and Verification procedures:** Programs should have in place validation and verification standards and procedures, as well as requirements and procedures for the accreditation of validators and verifiers. All of the above-mentioned standards, procedures, and requirements should be publicly disclosed.
7. **Program Governance:** Programs should publicly disclose who is responsible for administration of the program and how decisions are made.
8. **Transparency and Public Participation Provisions:** Programs should publicly disclose (a) what information is captured and made available to different stakeholders; and (b) its local stakeholder consultation requirements (if applicable) and (c) its public comments provisions and requirements, and how they are considered (if applicable). Conduct public comment periods and transparently disclose all approved quantification methodologies.
9. **Safeguards System:** Programs should have in place safeguards to address environmental and social risks. These safeguards should be publicly disclosed.
10. **Sustainable Development Criteria:** Programs should publicly disclose the sustainable development criteria used, for example, how this contributes to achieving a country's stated sustainable development priorities, and any provisions for monitoring, reporting and verification.
11. **Avoidance of Double Counting, Issuance and Claiming:** Programs should provide information on how they address double counting, issuance and claiming in the context of evolving national and international regimes for carbon markets and emissions trading.

Carbon Offset Credit Integrity Assessment Criteria: There are a number of generally agreed principles that have been broadly applied across both regulatory and voluntary offset credit programs to address environmental and social integrity. These principles hold that offset credit programs should deliver credits that represent emissions reductions, avoidance, or sequestration that:

1. Are additional.
2. Are based on a realistic and credible baseline.
3. Are quantified, monitored, reported, and verified.

4. Have a clear and transparent chain of custody.
5. Represent permanent emissions reductions.
6. Assess and mitigate against potential increase in emissions elsewhere.
7. Are only counted once towards a mitigation obligation.
8. Do no net harm.

Eligibility criteria should apply at the program level, as the expertise and resources needed to develop and implement ICAO emissions criteria at a methodology and project level is likely to be considerable.

1. ***Eligibility Criterion: Carbon offset programs must generate units that represent emissions reductions, avoidance, or removals that are additional.*** Additionality means that the carbon offset credits represent greenhouse gas emissions reductions or carbon sequestration or removals that exceed any greenhouse gas reduction or removals required by law, regulation, or legally binding mandate, and that exceed any greenhouse gas reductions or removals that would otherwise occur in a conservative, business-as-usual scenario. Eligible offset credit programs should clearly demonstrate that the program has procedures in place to assess/test for additionality and that those procedures provide a reasonable assurance that the emissions reductions would not have occurred in the absence of the offset program. If programs pre-define certain activities as automatically additional (e.g., through a “positive list” of eligible project types), then they have to provide clear evidence on how the activity was determined to be additional. The criteria for such positive lists should be publicly disclosed and conservative. If programs do not use positive lists, then project’s additionality and baseline setting should be assessed by an accredited and independent third-party verification entity and reviewed by the program.
2. ***Eligibility Criterion: Carbon offset credits must be based on a realistic and credible baseline.*** Offset credits should be issued against a realistic, defensible, and conservative baseline estimation of emissions. The baseline is the level of emissions that would have occurred assuming a conservative “business as usual” emissions trajectory i.e., emissions without the emissions reduction activity or offset project. Baselines and underlying assumptions must be publicly disclosed.
3. ***Eligibility Criterion: Carbon offset credits must be quantified, monitored, reported and verified.*** Emissions reductions should be calculated in a manner that is conservative and transparent. Offset credits should be based on accurate measurements and quantification methods/protocols. Monitoring, measuring, and reporting of both the emissions reduction activity and the actual emissions reduction from the project should, at a minimum, be conducted at specified intervals throughout the duration of the crediting period. Emissions reductions should be measured and verified by an accredited and independent third-party verification entity. Ex-post verification of the project’s emissions must be required in advance of issuance of offset credits; Programs that conduct ex-ante issuance (e.g., issuance of offset units before the emissions reductions and/or carbon sequestration have occurred and been third-party verified) should not be eligible. Transparent measurement and reporting is essential, and units from offsetting programs/projects eligible in a global MBM should only come from those that require independent, ex-post verification.

4. **Eligibility Criterion: Carbon offset credits must have a clear and transparent chain of custody within the offset program.** Offset credits should be assigned an identification number that can be tracked from when the unit is issued through to its transfer or use (cancellation or retirement) via a registry system(s).
5. **Eligibility Criterion: Permanence** – Carbon offset credits must represent emissions reductions, avoidance, or carbon sequestration that are permanent. If there is risk of reductions or removals being reversed, then either (a) such credits are not eligible or (b) mitigation measures are in place to monitor, mitigate, and compensate any material incidence of non-permanence.
6. **Eligibility Criterion: A system must have measures in place to assess and mitigate incidences of material leakage.** Offset credits should be generated from projects that do not cause emissions to materially increase elsewhere (this concept is also known as leakage). Offset credit programs should have an established process for assessing and mitigating leakage of emissions that may result from the implementation of an offset project or program.
7. **Eligibility Criterion: Are only counted once towards a mitigation obligation.** Measures must be in place to avoid:
 - a) Double issuance (which occurs if more than one unit is issued for the same emissions or emissions reduction).
 - b) Double use (which occurs when the same issued unit is used twice, for example, if a unit is duplicated in registries).
 - c) Double claiming (which occurs if the same emissions reduction is counted twice by both the buyer and the seller (i.e., counted towards the climate change mitigation effort of both an airline and the host country of the emissions reduction activity)). In order to prevent double claiming, eligible programs should require and demonstrate that host countries of emissions reduction activities agree to account for any offset units issued as a result of those activities such that double claiming does not occur between the airline and the host country of the emissions reduction activity.
8. **Eligibility Criterion: Carbon offset credits must represent emissions reductions, avoidance, or carbon sequestration from projects that do no net harm.** Offset projects should not violate local, State/provincial, national or international regulations or obligations. Offset programs should show how they comply with social and environmental safeguards and should publicly disclose which institutions, processes, and procedures are used to implement, monitor, and enforce safeguards to identify, assess and manage environmental and social risks.

2.5 CORSIA Central Registry (CCR)

This ICAO CORSIA Implementation Element is reflected in five ICAO documents referenced in ICAO Annex 16 Volume IV, Chapters 1 and 3, and Appendix 1:

1. CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA
2. CORSIA Aeroplane Operator to State Attributions
3. CORSIA 2020 Emissions
4. CORSIA Annual Sector's Growth Factor (SGF)
5. CORSIA Central Registry (CCR): Information and Data for Transparency

2.5.1 CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA

The ICAO document entitled '***CORSIA Central Registry (CCR): Information and Data for the Implementation of CORSIA***' is referenced in ICAO Annex 16 Volume IV, Chapters 1 and 3 and Appendix 1.

It provides information from the CORSIA Central Registry (CCR) system that is required to be published in order to support the implementation of CORSIA.

The information will include:

1. The ICAO document entitled; "***CORSIA Aeroplane Operator to State Attributions***" that includes a list of Aeroplane Operators and the State to which they are attributed (used to avoid duplication or reporting gaps);
2. The ICAO document entitled; "***CORSIA 2020 Emissions***" that includes the Total international aviation CO₂ emissions in 2020 (used to determine the first year in which a New Entrant has offsetting requirements); and
3. The ICAO document entitled; "***CORSIA Annual Sector's Growth Factor (SGF)***" that includes the Annual Sector's Growth Factor (SGF_y) composed of Total Sectoral CO₂ Emissions (SE_y) and Average of the Total Sectoral CO₂ emissions (SE_{B,y}) during 2019 and 2020 covered by Chapter 3 in a given year (y).

Note.- The CORSIA Annual Sector's Growth Factor (SGF), calculated by ICAO according to the equation in Note 1 from Annex 16 Volume IV Part II Chapter 3, para. 3.2.1, and will be published with at least 8 significant digits.

2.5.2 CORSIA Central Registry (CCR): Information and Data for Transparency

The ICAO document entitled '***CORSIA Central Registry (CCR): Information and Data for Transparency***' is referenced in ICAO Annex 16 Volume IV, Chapter 2 and Appendix 5.

It provides information from the CORSIA Central Registry (CCR) system that is required to be published in order to ensure transparency.

The information will include:

- List of Verification Bodies accredited in each State;
- Total average CO₂ emissions for 2019 and 2020 aggregated for all Aeroplane Operators on each State pair route;
- Total annual CO₂ emissions aggregated for all Aeroplane Operators on each State pair, (with identification of State pairs subject to offsetting requirements i.e. Annex 16 Volume IV Chapter 3 in a given year); and
- For each Aeroplane Operator:
 - Aeroplane Operator name,
 - State in which Aeroplane Operator is attributed,
 - Reporting year,
 - Total annual CO₂ emissions,
 - Total annual CO₂ emissions for State pairs subject to offsetting requirements i.e. Annex 16 Volume IV Chapter 3, 3.1,
 - Total annual CO₂ emissions for State pairs that are not subject to offsetting requirements.

Note: Where CO₂ emissions are based on a CO₂ Emissions Estimation Method described in Annex 16 Volume IV, Appendix 4, this will be indicated.
- Production year of the sustainable aviation fuels claimed;
- Producer of the sustainable aviation fuels claimed;
- Type of fuel, feedstock and conversion process used to create each sustainable aviation fuel claimed;
- Batch number(s) of each sustainable aviation fuel claimed;
- Total mass of each batch of sustainable aviation fuel claimed; and
- State reporting the information.
- Information at a State and Global aggregate level for a specific compliance period:
 - Total final offsetting requirements over the compliance period;
 - Total quantity of emissions units cancelled over the compliance period to reconcile the total final offsetting requirements;
 - Consolidated identifying information for cancelled emissions units included in Field 5 of Table A5-8.

3. ICAO CORSIA SUPPORTING DOCUMENTS

In addition to the ICAO CORSIA Implementation Elements reflected in fourteen ICAO documents, this section provides information on ICAO CORSIA Supporting Documents, including:

- *Description of ICAO Processes* to manage and maintain the ICAO CORSIA Implementation Elements in Section 2, and the approval process by the ICAO Council; and
- *Technical information*, where applicable, on the development of the ICAO CORSIA Implementation Elements.

3.1 CORSIA States for Chapter 3 State Pairs

3.1.1 Description of ICAO Process to maintain this ICAO CORSIA Implementation Element

In accordance with Annex 16 Volume IV, Part II, Chapter 3, paragraph 3.1, States shall inform ICAO on whether they wish to volunteer to participate in the CORSIA during 2021 by **30 June 2020**. These States will define the State pairs with offsetting requirements for 2021 and, following approval by ICAO Council, the information on these States will be made public on this ICAO website by **1 August 2020**.

ICAO will develop and recommend updates to this information that will be captured in some form of ICAO Document and, following approval by the ICAO Council, the ICAO CORSIA Implementation Element will be published on an ICAO CORSIA website. Details of these processes are still to be defined, although ICAO Resolution A39-3, para. 9 provides further insight on the phased implementation approach linked to this issue:

Period 2021 - 2026

ICAO will provide information on the States that are participating in CORSIA in a given year during the period 2021 – 2026 according to the following guidance:

- *In line with Assembly Resolution A39-3, paragraph 9.f), States who decide to voluntarily participate in the scheme, or decide to discontinue the voluntary participation from the scheme, may only do so from 1 January in any given year and they shall notify ICAO of their decision by no later than 30 June of the preceding year.*

Period 2027 – 2035

ICAO will provide information on the States that are participating in CORSIA in a given year during the period 2027 – 2035 according to the following guidance:

- *In line with Assembly Resolution A39-3, paragraph 9.e), States that have an individual share of international aviation activities in RTKs in year 2018 above 0.5 per cent of total RTKs or whose cumulative share in the list of States from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs will be included among the States that are participating in CORSIA in a given year. This provision will not apply to Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) unless they volunteer to participate in this phase.*
- *In line with Assembly Resolution A39-3, paragraph 9.f), States for which the second phase does not apply according to Assembly Resolution A39-3, paragraph 9.e), which decide to voluntarily participate in the scheme, or decide to discontinue the voluntary participation from the scheme,*

may only do so from 1 January in any given year and they shall notify ICAO of their decision by no later than 30 June of the preceding year.

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3.2 ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)

3.2.1 Description of ICAO Process to maintain this ICAO CORSIA Implementation Element

In line with the evolving requirements of CORSIA, an initial version of the CERT with CO₂ estimation functionality only will be available in **mid 2018** to support pre-monitoring assessments. A subsequent version of the CERT, with both CO₂ estimation and reporting functionality, will be available by **January 2020** at the latest to support Aeroplane Operators in demonstrating compliance with the MRV requirements.

ICAO CAEP will develop and recommend updates to the CERT information that will be captured in some form of ICAO Document and, following approval by the ICAO Council, the ICAO CORSIA Implementation Element will be published on an ICAO CORSIA website.

3.2.2 Technical information

The following technical information will be developed by CAEP, and approved by the ICAO Council, in order to support the use of CERT:

1. Background information on the development of the CERT (e.g. data, modelling methodology, assumptions), and the technical process for updating the tool to ensure it continues to be fit for purpose; and
2. 'User Guide' and web based tutorial on the functionality of CERT and how to use it.

3.3 CORSIA Sustainable Aviation Fuels

3.3.1 Description of ICAO Processes to maintain this ICAO CORSIA Implementation Element

ICAO CAEP will develop and recommend updates to this information that will be captured in some form of ICAO Document and, following approval by the ICAO Council, the ICAO CORSIA Implementation Element will be published on an ICAO CORSIA website.

3.3.2 Technical information

Additional technical information is expected to be developed by CAEP, and approved by the ICAO Council.

3.4 CORSIA Eligible Emissions Units

3.4.1 Description of ICAO Processes to maintain this ICAO CORSIA Implementation Element

ICAO will develop and recommend updates to this information that will be captured in some form of ICAO Document and, following approval by the ICAO Council, the ICAO CORSIA Implementation Element will be published on an ICAO CORSIA website. Details on these processes are still to be defined, although ICAO Assembly Resolution A39-3 provides further insight on the implementation approach linked to this issue:

- *The Assembly requested the Council to develop, with the technical contribution of CAEP, the SARPs and related guidance material for Emissions Unit Criteria (EUC) to support the purchase of appropriate emissions units by aeroplane operators under the scheme, taking into account relevant developments in the UNFCCC and Article 6 of the Paris Agreement, for adoption by the Council as soon as possible but not later than 2018 (A39-3, paragraph 20 c).*
- *The Assembly requested the Council to establish, with the technical contribution of CAEP, a standing technical advisory body on the Emissions Unit Criteria (EUC) to make recommendations to the Council on the eligible emissions units for use by the CORSIA (A39-3, paragraph 20 d).*
- *The Assembly decided that emissions units generated from mechanisms established under the UNFCCC and the Paris Agreement are eligible for use in CORSIA, provided that they align with decisions by the Council, with the technical contribution of CAEP, including on avoiding double counting and on eligible vintage and timeframe (A39-3, paragraph 21).*
- *The Assembly decided that the CORSIA will use emissions units that meet the Emissions Unit Criteria (EUC) in paragraph 20 above (A39-3, paragraph 23).*
- *The Assembly requested the Council to promote the use of emissions units generated that benefit developing States, and encourages States to develop domestic aviation-related projects (A39-3, paragraph 24).*
- *The Assembly requested the Council to explore further development of aviation-related methodologies for use in offsetting programmes, including mechanisms or other programmes under the UNFCCC, and encourages States to use such methodologies in taking actions to reduce aviation CO₂ emissions, which could further enable the use of credits generated from the implementation of such programmes by the CORSIA, without double-counting of emissions reduction (A39-3, paragraph 25).*

4. APPENDIX: EXAMPLES OF ICAO CORSIA WEBSITE FOR PUBLISHING ICAO CORSIA IMPLEMENTATION ELEMENTS

4.1 CORSIA States for Chapter 3 State Pairs

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)
CORSIA States for Chapter 3 State Pairs

This webpage is referenced in ICAO Annex 16 Volume IV, Part II, Chapter 3, Section 3.1. It provides information on those States participating in CORSIA that define the State pairs with offsetting requirements for the current year. This is critical information required by Aeroplane Operators to determine the applicability scope of the CORSIA CO₂ offsetting requirements.

States Participating in CORSIA for year 202x

State	Reference/Source
...	...
...	...
...	...
...	...
...	...
...	...
...	...

References:

- Letters from States
- 2018 International RTK list per States
- List of LLCs, LLDCs, SIDs

[Archived Information on States that defined 'Chapter 3' State pairs for previous years](#)

Note: The State pairs subject to offset requirements (i.e., aerodrome pairs and State pairs) in a given year will be embedded in the CORSIA CO₂ Estimation and Reporting Tool (CERT). This will facilitate the filtering of international State pairs that are subject to both MRV and offsetting requirements versus State pairs that are subject to MRV requirements only.

4.2 ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT)

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

ICAO CORSIA CO₂ Estimation & Reporting Tool (CERT) and templates

This webpage is referenced in ICAO Annex 16 Volume IV, Part II, Chapter 2, Section 2.2 and Appendix 3. It provides information on the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT) that can be used by an Aeroplane Operator to support the monitoring and reporting of their CO₂ emissions.

The CERT tool supports Aeroplane Operators in fulfilling their monitoring and reporting requirements by populating the standardized [Emissions Monitoring Plan](#) and [Emissions Report](#) templates in Annex 16 Volume IV, Attachment D. This support includes:

- (i) assessing its eligibility to use fuel burn monitoring methods in support of their Emissions Monitoring Plan (e.g. CO₂ emissions threshold requirements);
- (ii) assessing whether or not it is within the applicability scope of the Chapter 2 MRV requirements; and
- (iii) filling any CO₂ emissions data gaps.

Users of the tools can report issues and request support via xxxxx@icao.int.

Tools

ICAO CORSIA CO₂ Estimation & Reporting Tool (CERT) available for [download](#) *(available in 2018)*
[Tool Demo](#) ** Additional functionality available in 2019 and 2021 versions*

Templates

Emissions Monitoring Plan available for [download](#) *(available in 2018)*

Emissions Report Template available for [download](#) *(available in 2020)*

Tutorial and Documentation [download](#)

[Archived information on past versions of CERT and Templates](#)

4.3 CORSIA Sustainable Aviation Fuels

4.3.1 CORSIA Sustainable Aviation Fuels: Information on Sustainability Certification Schemes (SCS)

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

CORSIA Sustainable Aviation Fuels: Information on Sustainability Certification Schemes (SCS)

This webpage is referenced in ICAO Annex 16 Volume IV, Chapter 2. It provides information on CORSIA Approved Sustainability Certification Schemes that have been approved based on CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes. The certifiers from the approved SCSs certify sustainable aviation fuels against the sustainability criteria and can calculate actual life cycle emissions values using the agreed methodology, if default life cycle values are not applied.

CORSIA Approved Sustainability Certification Schemes

The list of CORSIA Approved Sustainability Certification Schemes meet the eligibility and have been assessed in accordance with the eligibility framework :

Name of the Sustainable Certification Scheme (SCS)	Name of Certifier
...	...
...	...
...	...
...	...
...	...
...	...

CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes

The eligibility framework and requirements for Sustainability Certification Schemes (SCS), including but not limited to assessing compliance with:

1. Assessing compliance with the CORSIA Sustainability Criteria;
2. Audit quality and scheme governance system;
3. Traceability requirements; and
4. Transmission information.

Additional information on the approval process for CORSIA Approved Sustainability Certification Schemes can be found at;

[Documentation on ICAO Processes to maintain this Supporting Information on Sustainable Aviation Fuels](#)

Information on processes followed by Certifiers from CORSIA Approved Sustainability Certification Schemes can be found at;

[Documentation on Processes followed by Certifiers from approved CORSIA SCS](#)

4.3.2 CORSIA Sustainable Aviation Fuels: Information for Certification of Sustainable Aviation Fuels

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

CORSIA Sustainable Aviation Fuels: Information for Certification of Sustainable Aviation Fuels

This webpage provides information on Processes followed by Certifiers from approved CORSIA SCS. These certifiers approve sustainable aviation fuels against the sustainability criteria and can calculate actual life cycle emissions values using the agreed methodology, if default life cycle values are not applied.

CORSIA Sustainability Criteria for Sustainable Aviation Fuels

A fuel shall meet the following criteria to be considered a sustainable aviation fuel;

Theme	Principle	Criteria
...
...
...

[See Section 2.3.2.1 for details]

CORSIA Default Life Cycle Emissions Values for Sustainable Aviation Fuels

Fuel Conversion Process	Fuel Feedstock	Core LCA Value	ILUCLCA Value	LSf (gCO ₂ e/MJ)
Fischer-Tropsch (FT)	Agricultural residues	7.7	0.0	7.7
	Forestry residues	8.3		8.3
	Municipal and solid waste (MSW), 0% non-biogenic carbon (NBC)	5.2		5.2
	Municipal solid waste (MSW) (NBC given as a percentage of the non-biogenic carbon content)	NBC*170.5+5.2		NBC*170.5+5.2
Hydroprocessed esters and fatty acids (HEFA)	Tallow	22.5	0.0	22.5
	Used cooking oil	13.9		13.9
	Palm fatty acid distillate	20.7		20.7
	Corn oil	17.2		17.2
Alcohol (isobutanol) to jet (ATJ)	Agricultural residues	29.3	0.0	29.3
	Forestry residues	23.8		23.8

Additional information on the approval process for default life cycle values can be found at; [Documentation on Process for development and approval process for default life cycle values](#)

CORSIA Methodology for Calculating Actual Life Cycle Emissions Values

If the fuel meets the sustainability criteria and a default life cycle emissions is not used, the certifier from the approved SCS shall use the following methodology to calculate an actual life cycle emissions value;

[See Section 2.3.2.3 for details]

[Documentation on Process for approving life cycle emissions values](#)

4.4 CORSIA Eligible Emissions Units

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

CORSIA Eligible Emissions Units and Eligibility Criteria

This webpage is referenced in ICAO Annex 16 Volume IV, Chapter 4, Section 4.2. It provides information on CORSIA Eligible Emissions Units, which an Aeroplane Operator shall use to meet its CO₂ offsetting requirements.

CORSIA Eligible Emissions Units

Emissions Units	Programme	Type

CORSIA Emissions Unit Eligibility Criteria

The list of Eligible Emissions Units above was developed according to the Eligibility Criteria below;

Criteria for emissions unit program design elements:

- 1) Clear Methodologies and Protocols, and their Development Process,
- 2) Scope Considerations,
- 3) Offset Credit Issuance and Retirement Procedures,
- 4) Identification and Tracking,
- 5) Legal Nature and Transfer of Units,
- 6) Validation and Verification procedures,
- 7) Program Governance,
- 8) Transparency and Public Participation Provisions,
- 9) Safeguards System,
- 10) Sustainable Development Criteria,
- 11) Avoidance of Double Counting, Issuance and Claiming.

Criteria for emissions unit integrity:

- 1) Are additional,
- 2) Are based on a realistic and credible baseline,
- 3) Are quantified, monitored, reported, and verified,
- 4) Have a clear and transparent chain of custody,
- 5) Represent permanent emissions reductions,
- 6) Assess and mitigate against potential increase in emissions elsewhere,
- 7) Are only counted once towards a mitigation obligation,
- 8) Do no net harm.

[Documentation on Process for approving List of CORSIA Eligible Emissions Units](#)

Programs should have qualification and quantification methodologies and protocols in place and available for use as well as a process for developing further methodologies and protocols. The existing methodologies and protocols as well as the process for developing further methodologies and protocols should be publicly disclosed.

4.5 CORSIA Central Registry (CCR)

4.5.1. Information and Data Needed to Implement CORSIA

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

CORSIA Central Registry (CCR): Information and Data Needed to Implement CORSIA

This webpage is referenced in ICAO Annex 16 Volume IV, Chapters 2 and 3. It provides information from the CORSIA Central Registry (CCR) system that is required to be published in order to support the implementation of CORSIA:

ICAO document entitled “CORSIA Aeroplane Operator to State Attributions”
(used to avoid duplication or lack of reporting by Aeroplane Operators)

Aeroplane Operator Name	Aeroplane Operator Code (Designator)	Contracting State (attributed to for purpose of CORSIA Annex 16 Volume IV Chapter 2)

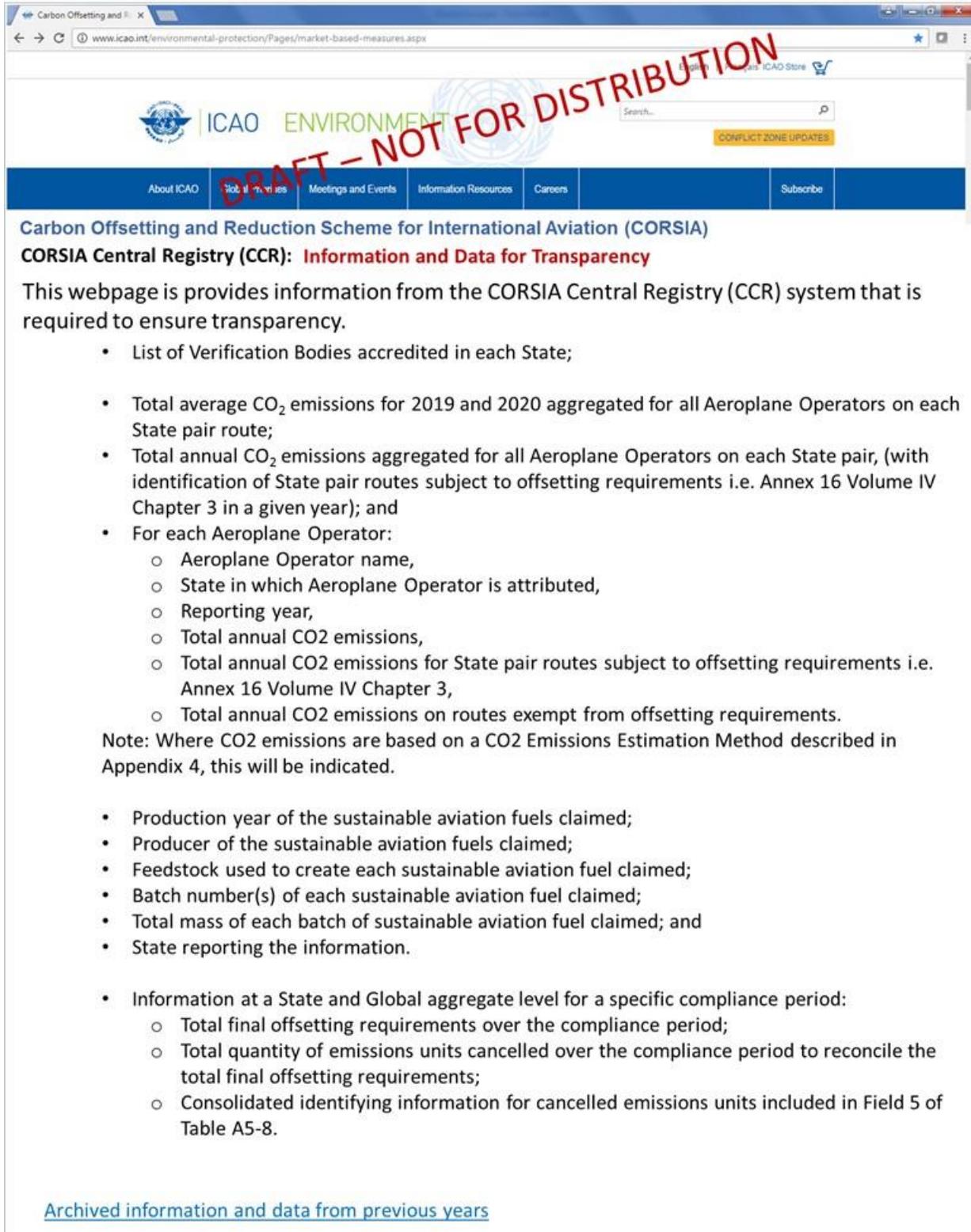
ICAO document entitled “CORSIA 2020 Emissions” *(needed for determination of New Entrant status)*
 - Total international aviation CO₂ emissions in 2020

The ICAO document entitled; “CORSIA Annual Sector’s Growth Factor (SGF)” *(needed for computation of annual offset requirements)*
 Sector’s Growth Factor (SGF_y), composed of:

- SE_y = Total sectoral CO₂ emissions covered by 3.1 in the given year y
- SE_B = Average of total sectoral CO₂ emissions during 2019 and 2020 from international flights, as defined in Annex 16 Volume IV Chapter 3 section 3.1 in the given year y

[Archived information and data from previous years](#)

4.5.2. Information and Data needed for the Purpose of Transparency



Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)

CORSIA Central Registry (CCR): Information and Data for Transparency

This webpage provides information from the CORSIA Central Registry (CCR) system that is required to ensure transparency.

- List of Verification Bodies accredited in each State;
- Total average CO₂ emissions for 2019 and 2020 aggregated for all Aeroplane Operators on each State pair route;
- Total annual CO₂ emissions aggregated for all Aeroplane Operators on each State pair, (with identification of State pair routes subject to offsetting requirements i.e. Annex 16 Volume IV Chapter 3 in a given year); and
- For each Aeroplane Operator:
 - Aeroplane Operator name,
 - State in which Aeroplane Operator is attributed,
 - Reporting year,
 - Total annual CO₂ emissions,
 - Total annual CO₂ emissions for State pair routes subject to offsetting requirements i.e. Annex 16 Volume IV Chapter 3,
 - Total annual CO₂ emissions on routes exempt from offsetting requirements.

Note: Where CO₂ emissions are based on a CO₂ Emissions Estimation Method described in Appendix 4, this will be indicated.

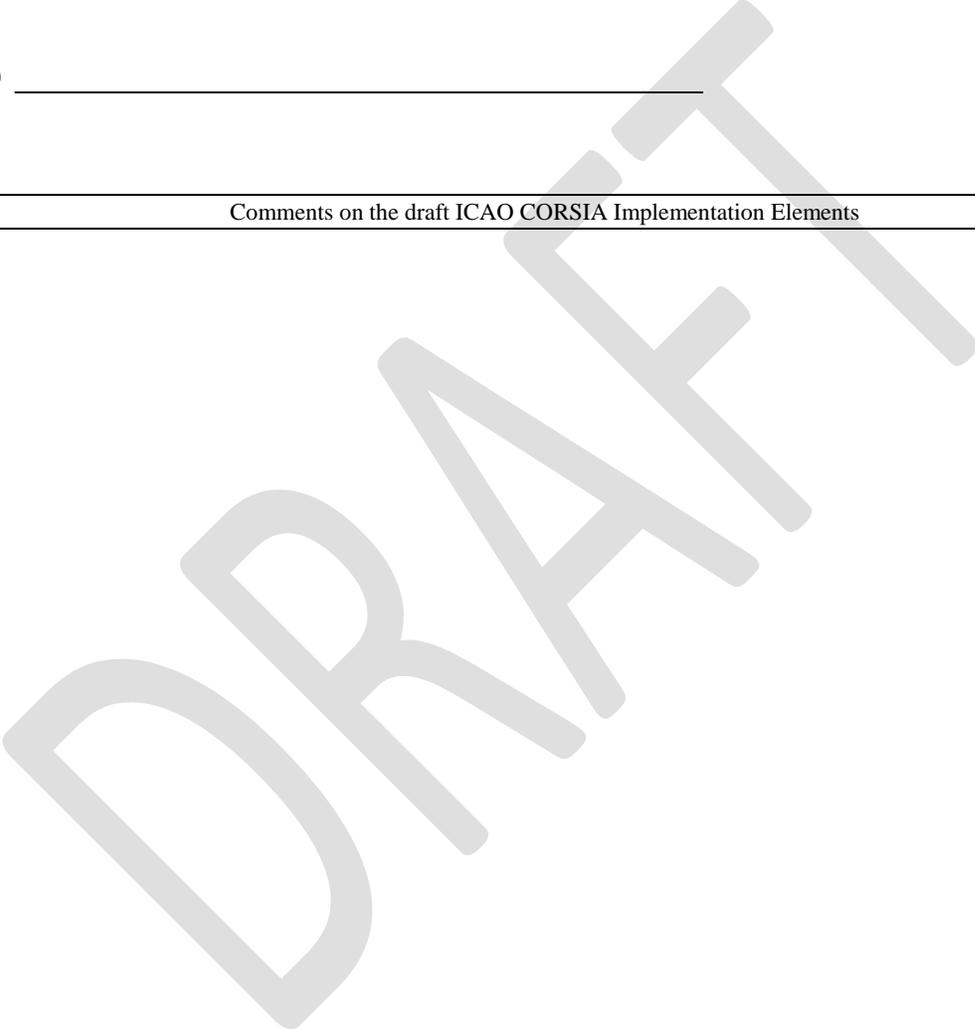
- Production year of the sustainable aviation fuels claimed;
- Producer of the sustainable aviation fuels claimed;
- Feedstock used to create each sustainable aviation fuel claimed;
- Batch number(s) of each sustainable aviation fuel claimed;
- Total mass of each batch of sustainable aviation fuel claimed; and
- State reporting the information.
- Information at a State and Global aggregate level for a specific compliance period:
 - Total final offsetting requirements over the compliance period;
 - Total quantity of emissions units cancelled over the compliance period to reconcile the total final offsetting requirements;
 - Consolidated identifying information for cancelled emissions units included in Field 5 of Table A5-8.

[Archived information and data from previous years](#)

**VOLUNTARY RESPONSE FORM FOR STATES WISHING TO COMMENT ON THE
DRAFT ICAO CORSIA IMPLEMENTATION ELEMENTS**

To: The Secretary General
International Civil Aviation Organization
999 Robert Bourassa Boulevard
Montreal, Quebec
Canada, H3C 5H7
Email: officeenv@icao.int

(State) _____

Comments on the draft ICAO CORSIA Implementation Elements


Signature: _____ Date: _____

— END —