



**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

NOTICE OF CORSIA MONITORING, REPORTING, AND VERIFICATION (MRV) PROGRAM – Rev. 1

Subj: CORSIA MRV Program

Date: May 25, 2023

Initiated by: AEE-1

A. Purpose

This describes the first revision of the Federal Aviation Administration’s (FAA) CORSIA Monitoring, Reporting, and Verification (MRV) Program and provides information to U.S. airplane operators on how to become a Program Participant.

This program fulfills the responsibilities of the United States under the Chicago Convention¹ to implement the ICAO Standards and Recommended Practices (SARPs) for the monitoring, reporting, and verification of CO₂ emissions from international flights pursuant to Annex 16, Volume IV – Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), of the Chicago Convention.²

The data collected from the CORSIA MRV Program may be used to inform any potential regulations or other initiatives that might be developed in the future. The FAA will propose and seek OMB approval to collect the information requested under this program, in accordance with the Paperwork Reduction Act, P.L. 104-13, 44 U.S.C. 3507.

B. Background

The CORSIA MRV Program is a voluntary program for U.S. air carriers, commercial, and general aviation (e.g., those who operate under 14 CFR Parts 91, 121, and 135) operators (collectively referred hereinafter as “operators”) to submit certain airplane CO₂ emissions data to the FAA to enable the United States to establish uniformity with the CORSIA SARPs. In June 2018, the International Civil Aviation Organization (ICAO) adopted SARPs to implement CORSIA in the form of Annex 16, Volume IV to the Convention on International Civil Aviation. The United States supported the decision to adopt the CORSIA SARPs based on the understanding that CORSIA is the exclusive market-based measure applying to international aviation, and that CORSIA will ensure fair and reciprocal commercial competition by avoiding a patchwork of country- or regionally-based regulatory measures that

¹ International Civil Aviation Organization (ICAO), Convention on Civil Aviation (“Chicago Convention”), 7 December 1944, (1994) 15 U.N.T.S. 295.

² <https://www.unitingaviation.com/publications/Annex-16-Vol-04/>

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are inconsistently applied, bureaucratically costly, and economically damaging. Furthermore, continued U.S. support for CORSIA assumes a high level of participation by other countries, particularly by countries with significant aviation activity, as well as a final CORSIA package that is acceptable to, and implementable by, the United States. In October 2022, the 41st Session of the ICAO Assembly agreed to Assembly Resolution A41-22 *Consolidated statement of continuing ICAO policies and practices related to environmental protection – Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*. This Assembly Resolution made adjustments to the CORSIA baseline applicable from 2024 to 2035 and adjusted the calculations used to determine offsetting obligations in later years of implementation. As a result of these updates and ongoing implementation requirements, the United States is updating FAA’s CORSIA MRV Program.

Under CORSIA, all ICAO Member States whose airplane operators undertake international flights will need to develop an MRV system for CO₂ emissions from those international flights starting January 1, 2019. The requirement to monitor, report, and verify CO₂ emissions is independent from offsetting, and the data reported by the States will be used for the calculation of the CORSIA’s baselines. In the event that FAA does not receive CO₂ emissions data from an operator, FAA will include an estimate of those non-reported emissions when reporting aggregated emissions to ICAO.

The FAA’s CORSIA MRV Program is intended to be the MRV system for monitoring, reporting, and verification of U.S. airplane operator CO₂ emissions from international flights for the United States. The offsetting of emissions under CORSIA, which may require rulemaking or other action, will be addressed at a future time.

C. Scope and Applicability

Participation in the CORSIA MRV Program is intended for U.S. airplane operators that produce annual CO₂ emissions greater than 10,000 tonnes (i.e., 10,000 metric tons) from international flights, excluding emissions from excluded flights. The following are excluded from the CORSIA MRV Program:

- Domestic flights;
- Humanitarian, medical, and firefighting operations, including flight(s) preceding or following a humanitarian, medical, or firefighting flight provided such flight(s) were conducted with the same airplane, were required to accomplish the related humanitarian, medical, or firefighting activities or to reposition thereafter the airplane for its next activity;
- Operations using an airplane with a maximum certificated take-off mass equal to or less than 5,700 kg;
- Operations on behalf of the U.S. military, provided that the flight plan is properly marked (i.e., Item 8 of the flight plan is marked “M”) or as otherwise consistent with condition(s) in the operator’s Emissions Monitoring Plan under this CORSIA MRV Program.

The CORSIA MRV Program can be effective only with participation from a “critical mass” of

U.S. operators conducting international flights. For purposes of the program, the FAA considers “critical mass” as operators representing 90 percent of Total International Fuel Consumption in 2017, as derived from the U.S. Department of Transportation, Bureau of Transportation Statistics, Database Name: Air Carrier Summary Data (Form 41 and 298C Summary Data), Table Name: T2: U.S. Air Carrier Traffic and Capacity Statistics by Aircraft Type. Once a critical mass of U.S. operators have voluntarily committed to the CORSIA MRV Program, the FAA will notify all Program Participants of that achievement. If the number of participating operators subsequently falls below critical mass, the FAA will make this status known to Program Participants through direct notification or a form of public notice.

The provisions in the initial CORSIA MRV Program were limited to the reporting years 2019 and 2020. This revision to the CORSIA MRV Program extends the annual reporting requirements through the end of 2027, to include both the Pilot Phase and the First Phase described in the CORSIA SARPs. The CORSIA MRV Program may be extended to subsequent reporting years. If extended, the FAA will revise the contents of this document accordingly.

The CORSIA MRV Program is completely voluntary, and Program Participants may request to be removed from the program at any time. Use of the term “will” in this document is aspirational only and is not intended to be read as imposing any obligation or right on either the FAA or Program Participants. Use of the terms “must,” “require,” “shall,” “has to,” or “mandatory” and references to “requirements” or “standards” refer generally to the CORSIA SARPs. The FAA anticipates that, if appropriate, it will conduct rulemaking or take other action to implement the offsetting and other mandatory provisions of the CORSIA.

D. Key Terms

The following key terms and phrases are defined for the purposes of the CORSIA MRV Program:

CEF – CORSIA Eligible Fuels (CEF), including Sustainable Aviation Fuel (SAF) and Lower Carbon Aviation Fuel (LCAF)

CERT – ICAO CORSIA CO₂ Estimation and Reporting Tool.

CORSIA – Carbon Offsetting and Reduction Scheme for International Aviation.

Critical mass – the number of Program Participants representing at least 90 percent of Total International Fuel Consumption in 2017, as derived from the U.S. Department of Transportation, Bureau of Transportation Statistics, Database Name: Air Carrier Summary Data (Form 41 and 298C Summary Data), Table Name: T2: U.S. Air Carrier Traffic and Capacity Statistics by Aircraft Type.

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Domestic flight – the operation of an airplane from takeoff at an airport of an ICAO Contracting State or its territories, and landing at an airport of the same ICAO Contracting State or its territories.

EMP – Emissions Monitoring Plan.

ETM – the ICAO Environmental Technical Manual, Volume 4, Second Edition (2019), (ICAO Doc 9501)

ICAO – the International Civil Aviation Organization.

International flight – the operation of an airplane from takeoff at an airport of an ICAO Contracting State or its territories, and landing at an airport of another ICAO Contracting State or its territories.

MRV – monitoring, reporting, and verification of CO₂ emissions in accordance with the CORSIA SARPs.

Operator(s) – U.S. air carriers, commercial, and general aviation (e.g., those who operate under 14 CFR Parts 91, 121, and 135) operators conducting international flights subject to the applicability of CORSIA.

Program Participant(s) – an eligible operator that voluntarily participates in the FAA’s CORSIA MRV Program.

SARPs – ICAO Standards and Recommended Practices.

Verification body – an independent third party that is qualified in accordance with Appendix D to perform verification of emissions data.

E. Program Description

This section provides a general overview of the CORSIA MRV Program, including participation in the program, program components, and program responsibilities. CORSIA’s MRV system consists of three components:

- Monitoring of CO₂ emissions based on certain methods.
- Reporting of CO₂ emissions data to the operator’s aviation authority (i.e., the FAA), and from the FAA to ICAO, where ICAO will consolidate the CO₂ emissions data and calculate the annual sectoral growth factor.
- Verification of CO₂ emissions data to ensure that the data is accurate and free of errors.

I. Program Participants

The FAA intends to conduct outreach and provide information to U.S. operators regarding the

CORSA MRV Program. Operators may also initiate contact with the FAA to request to become a Program Participant (refer to Section H. **Contact**, below).

The FAA recognizes that the business structures of entities engaged in international aviation are often complex. Consistent with Sec. 1.2.6 of the CORSA SARPs, Program Participants will be treated as follows:

1. Parent Company to Wholly Owned Subsidiary as “Program Participant” – To the extent that a Program Participant has a wholly owned subsidiary that also is an airplane operator that is legally registered in the United States, the Program Participant can be treated as a single consolidated airplane operator under the CORSA MRV Program, provided that the Program Participant reports disaggregated data for each separate operator in a manner acceptable to the FAA. Evidence should be included in the Program Participant’s Emissions Monitoring Plan to demonstrate that the subsidiary airplane operator is wholly owned.
2. Holding Company as “Program Participant” – To the extent that multiple airplane operators that are legally registered in the United States are wholly held within the same airline holding company, the airplane operators may designate a Program Participant among them to submit the requested data under the CORSA MRV Program, provided that the Program Participant separates the data for the differing corporate entities in a manner acceptable to the FAA. Evidence should be included in the Program Participant’s Emissions Monitoring Plan to demonstrate that the airplane operators to be covered by the Program Participant are wholly held within the same corporate structure. NOTE: When completing the EMP, enter the holding company information in the fields designated for parent-subsidiary relationships.

The FAA will evaluate potential Program Participants to determine if operators are within the CORSA scope of applicability. If an operator is within the CORSA scope of applicability (as outlined in Section C, above), that operator is eligible to participate in the CORSA MRV Program. Eligible Program Participants will be requested to sign, through an authorized executive-level representative or officer, a form that memorializes their voluntary agreement and nonbinding commitment to participate in the CORSA MRV Program, their consent for the FAA to evaluate, process, and disclose, as appropriate, the data to be collected under the program, and acknowledgements of other administrative and legal matters. Program Participants that submitted a signatory form for the initial FAA CORSA MRV Program are not required to submit a new signatory form to continue participation in this revision of the CORSA MRV Program. A sample signatory form for the CORSA MRV Program is provided in Appendix A. If a potential Program Participant falls outside the CORSA scope of applicability, the FAA will work with such participants in a manner consistent with an eligible Program Participant; however, data received from such participants will not be included in any CORSA reporting to establish uniformity with the ICAO Standards.

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The FAA expects to post a listing of Program Participants on the CORSIA MRV Program webpage.

II. Emissions Monitoring

Emissions Monitoring Plan

CORSIA requires a covered airplane operator to monitor and record its fuel use from international flights on an annual basis for calendar years 2019 and 2020, in accordance with an eligible monitoring method and in accordance with its Emissions Monitoring Plan (EMP).

An EMP has four main components:

- Airplane operator identification;
- Fleet and operations data;
- Methods and means of calculating emissions from international flights; and
- Data management, data flow and control.

The EMP combines these components in a single document in order to provide both the Program Participant and the FAA with sufficient information to enable a smooth and efficient process for monitoring and reporting throughout the CORSIA MRV Program.

EMP Development

Under the CORSIA MRV Program, the FAA will collect information and data from Program Participants who voluntarily comply with the CORSIA SARPs. Program Participants will be requested to supply a copy of the EMP if they have elected to develop one. Program Participants are encouraged to contact and coordinate with the FAA early in the development of their EMPs.

Full contents of an EMP are included in Appendix 4 of the CORSIA SARPs, and a plan template is included in Appendix C.

Review and Approval of EMP

Program Participants should submit their EMPs to the FAA as soon as practicable, bearing in mind that the CORSIA SARPs specify February 28, 2019 as a deadline, and noting that some Operators submitted their plans on, or before, that date in anticipation of this notice. The FAA will confirm receipt of the EMP in a timely manner, no later than five (5) business days after receipt.

The FAA will review the EMP for consistency with Appendix 4 of the CORSIA SARPs. If the EMP is incomplete and/or inconsistent with the SARPs, the FAA will engage with the Program Participant to resolve outstanding issues. This may involve returning the EMP to the Program Participant along with an explanation as to why the plan was found deficient, or a request for further information. Program Participants should endeavor to revise and resubmit their EMP within thirty (30) days.

The FAA will approve an EMP through the issuance of a letter of approval. However, since this is a voluntary program, FAA approval of an EMP signifies only that the FAA has determined the EMP is consistent with the CORSIA SARPs; it is not a finding of compliance. Program Participants that submitted an EMP and received FAA approval under the initial FAA CORSIA MRV Program are not required to submit a new EMP under this revision of the CORSIA MRV Program.

If a Program Participant does not have an approved EMP as of January 1, 2019, the date operators should begin emissions monitoring under the CORSIA, it should monitor and record its CO₂ emissions in accordance with the eligible monitoring method outlined in the EMP that it intends to submit, or has already submitted, to the FAA. If a Program Participant has elected not to develop an EMP, in order to continue as a Participant, it should consult with the FAA on how it intends to monitor and record its CO₂ emissions in accordance with an eligible monitoring method under the CORSIA SARPs.

Program Participants who have elected to have their EMP approved should resubmit the EMP to the FAA for approval if there is a material change to the information contained within the EMP (i.e. a change to the information presented in the plan that would affect the status or eligibility of the Program Participant for an option under the CORSIA emissions monitoring requirements, or that would otherwise affect the decision by the FAA with regard to whether the Program Participant's approach to monitoring conforms with the CORSIA SARPs). Guidance on changes to the EMP is provided in the Emissions Monitoring Plan Checklist at Table 3-2 of ICAO CORSIA Environmental Technical Manual (ETM), Second Edition. In the event of a resubmission due to a material change, the process for review of the EMP specified above will apply.

Program Participants should also inform the FAA of changes that would affect the FAA's oversight (e.g., change in corporate name or address), even if the changes do not fall within the definition of a material change. However, such changes do not require resubmission of the EMP.

Eligible Monitoring Methods and Calculation of CO₂ Emissions

Under CORSIA, there would be two ways of monitoring CO₂ emissions:

- by tracking the fuel use by applying one of the five "Fuel Use Monitoring Methods" described in Appendix 2 of the CORSIA SARPs and then calculating CO₂ emissions from the fuel use, or
- by using the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), which is described in Appendix 3 of the CORSIA SARPs.

The airplane operator's level of activity will determine whether the operator is eligible to use the CERT, or if it is required to apply a Fuel Use Monitoring Method. A Program Participant should include the selection in its EMP. The CERT and Fuel Use Monitoring Methods are described in more detail in Appendix B of this document.

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III. Emissions Reporting

Under the CORSIA MRV Program, operators submit to the FAA a verified Emissions Report on an annual basis. The FAA will send an annual request to Program Participants to submit their verified Emissions Report along with the associated Verification Report (see Sec. E.IV below on verification).

Emissions Report Forms

For consistency and efficient processing, Program Participants should use the “Emissions Report Form” found in Appendix D of this document to report their annual CO₂ emissions. Program Participants that want to report their emissions reduction from use of CORSIA Eligible Fuels, including Sustainable Aviation Fuel (SAF) and Lower Carbon Aviation Fuel (LCAF), should use the “CORSIA Eligible Fuels Annex” (CEFA) found in Appendix D of this document. If a Program Participant wants to use a different method for reporting, it should contact the FAA at least two months prior to the deadline for submission to coordinate an alternative form of reporting that would be acceptable under the CORSIA.

As noted in the form, Program Participants that include subsidiary airplane operators or those within an airline holding company, as described in Sec. E.1 above, should report disaggregated data relating to each separate airplane operator by appending the report(s) specific to each entity to the main Emissions Report.

Program Participants should have their Emissions Report Form and optional CORSIA Eligible Fuels Annex verified as described in Sec.E.IV below. The Emissions Report Form includes fields to input information related to verification.

Schedule of Emissions Reporting

This revision to the CORSIA MRV Program extends the initial CORSIA MRV Program Schedule of Reporting beyond the Baseline Period to also cover Emissions Reporting during the Pilot Phase (2021-2023) and the First Phase (2023-2026). The anticipated schedule for reporting is as follows:

Baseline Period (2019-2020):

-2019 Emissions Report: The FAA sent requests on May 1, 2020. Program Participants should have submitted their reports by June 1, 2020.

-2020 Emissions Report: The FAA sent requests on May 1, 2021. Program Participants should have submitted their reports by May 31, 2021.

Pilot Phase (2021-2023):

-2021 Emissions Report: The FAA sent requests on May 1, 2022. Program Participants should have submitted their reports by May 31, 2022.

-2022 Emissions Report: The FAA will sent requests on May 1, 2023. Program Participants should have submitted their reports by May 31, 2023.

-2023 Emissions Report: The FAA will send requests on May 1, 2024. Program Participants should submit their reports by May 31, 2024.

First Phase (2024-2026):

-2024 Emissions Report: The FAA will send requests on May 1, 2025. Program Participants should submit their reports by May 31, 2025.

-2025 Emissions Report: The FAA will send requests on May 1, 2026. Program Participants should submit their reports by May 31, 2026.

-2026 Emissions Report: The FAA will send requests on May 1, 2027. Program Participants should submit their reports by May 31, 2027.

FAA Transmittal to ICAO

The FAA will use aggregated CO₂ emissions data from Program Participants' verified Emissions Report Forms as an input, combined with CO₂ emissions data and/or appropriate estimates of CO₂ emissions data from any other U.S. operators that are not program participants, to submit to ICAO in total annual CO₂ emissions per State pair aggregated for all airplane operators attributed to the United States to maintain consistency with the CORSIA SARPs.

The annual Emissions Report Form includes CO₂ emissions from all international flights per State pair, regardless of whether these flights are subject to future CORSIA offsetting. A "State pair" in this context means a group of two States composed of a departing State or its territories and an arrival State or its territories (e.g., flights between two States, State A and State B, will be reported as separate State pairs: A-B and B-A). **Note:** Program Participants may submit their emissions data based on a State-pair or City-pair basis, but the FAA will transmit the data to ICAO using a State-pair basis.

In turn, the information to be reported from the FAA to ICAO would include:

- Total CO₂ emissions for each State pair aggregated for all airplane operators.

This revision of the CORSIA MRV Program extends the initial CORSIA MRV Program to cover reporting for both the Pilot Phase (2021-2023) and the First Phase (2024-2026). FAA will request, process, and transmit the following additional information to ICAO:

- Total annual CO₂ emissions for each operator;
- Total aggregated annual CO₂ emissions for all State pairs likely subject to future offsetting requirements for each operator;
- Total aggregated annual CO₂ emissions for all State pairs that would not be subject to future offsetting requirements for each operator;
- Production year of CEF claimed and producer of CEF;
- Batch numbers and total mass of CEF claimed
- Total aggregated CEF fuel type and total mass of neat CEF claimed;
- Total emissions reductions for each CEF fuel type; and
- Total aggregated emissions reductions from CEF claimed.

Much of the operator information and aggregated data to be transmitted to ICAO will eventually be made publicly available through the CORSIA Central Registry (CCR). The

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CCR is a system developed by ICAO as a tool for States to submit data and information to ICAO as part of the implementation of CORSIA. This tool will assist States in providing a standardized format and means to submit their CORSIA specific data, and allow ICAO to effectively and efficiently receive, consolidate, and develop the necessary reports for CORSIA, as well as to make available the submitted information for transparency.

Complete information to be reported from the FAA to ICAO is included in Appendix 5 of the CORSIA SARPs.

IV. Emissions Report Verification

Verification of Emissions Report data ensures the consistency of information, and identifies any potential errors in the airplane operator's annual Emissions Report and optional CORSIA Eligible Fuels Annex. The CORSIA SARPs provide a three-step verification process:

- *Step 1:* A voluntary pre-verification **by the operator** is recommended.
- *Step 2:* A third-party verification is performed by an independent third-party **verification body**, before the operator submits its report to the State Authority.
- *Step 3:* the **State Authority** conducts an order of magnitude review.

Pre-Verification

Pre-verification is a recommended practice for an operator. This means that the operator conducts a verification of its data before submitting it to a verification body. Internal pre-verification is likely to increase the quality of the Emissions Report, but it would not replace third-party verification. Pre-verification provides the operator with an opportunity to identify potential irregularities and refine data prior to third-party verification, potentially saving time and resources later in the process.

A recommended checklist approach for internal pre-verification can be found in the ICAO CORSIA ETM (Doc 9501), Volume IV, Second Edition.

Third-Party Verification

Under the CORSIA MRV Program, Program Participants will be asked on the Emissions Report Form to complete information concerning whether it had conducted third-party verification of its CO₂ emissions data. As part of its Emissions Report submission, a Program Participant will be asked to submit a Verification Report issued by the verification body. Program Participants that want to report their emissions reduction from use of CEF should include their CORSIA Eligible Fuels Annex when conducting third-party verification.

CORSIA would require Program Participants to engage a third-party verification body that satisfies the minimum qualifications outlined in Appendix 6 of the CORSIA SARPs. Further details on qualifications and accreditation of third-party verification bodies can be found in Appendix D of this document.

In addition to its own submissions, a Program Participant should direct the independent third-party verification body it uses to directly submit to the FAA a copy of the verified Emissions Report and associated Verification Reports.

FAA Order of Magnitude Check

The FAA will perform an “order of magnitude” check of the Emissions Report using the guidance material provided in the ICAO CORSIA ETM (Doc 9501), Volume IV, Second Edition. This review is the check performed by a State to verify the data against different sources of information to which the State has access. The FAA will notify the Program Participant of the conclusion of its order of magnitude check in a timely manner, no later than forty-five (45) days after FAA’s receipt.

F. Record Keeping

The FAA recommends that Program Participants retain all submissions and supporting data for at least ten (10) years.

G. Confidentiality

Except as described in this statement and as provided by law, including the Freedom of Information Act, 5 U.S.C. 552, or by Court order, the FAA considers the voluntary information submitted by Program Participants to be business, safety, and/or security confidential.

Program Participants should understand that the fact of their participation in the CORSIA MRV Program will not be confidential. The FAA intends to make a listing of Program Participants available to the public and ICAO, as appropriate.

H. FAA Contact

The FAA Office of Environment and Energy (AEE) is responsible for administering the CORSIA MRV Program. All submissions, including the EMP, Emissions Report Form, and Verification Reports, can be submitted electronically or by mail as follows:

Email electronic submissions to: 9-AWA-CORSIA@faa.gov

Mail to: FAA Office of Environment and Energy (AEE)
CORSIA MRV Program
800 Independence Ave., S.W.
Washington, DC 20591

General questions regarding the CORSIA MRV Program, including inquiries about program participation, should be directed to the following AEE contact: Kevin Partowazam, (202) 267-3563, 9-AWA-CORSIA@faa.gov.

CORSIA MRV Program

I. Conclusion

This statement describes the components, procedures, and expectations of the FAA's voluntary CORSIA MRV Program.

Issued in Washington, DC on May 25, 2023.

A handwritten signature in black ink, appearing to read "Kevin Welsh", with a long horizontal flourish extending to the right.

Kevin Welsh
Executive Director, Office of Environment and Energy

Appendix A – Signatory Form

Appendix B – Eligible Monitoring Methods

Appendix C – Emissions Monitoring Plan Template

Appendix D – Emissions Report and Verification

Appendix A: Signatory Form

See Attachment 1 – U.S. CORSIA Program Signatory Form

Appendix B: Eligible Monitoring Methods

Each Program Participant agrees to monitor and record its fuel use from international flights, on an annual basis, in accordance with an eligible monitoring method, as described below and in accordance with its Emissions Monitoring Plan.

A. Eligible Monitoring Methods and Calculation of CO₂ Emissions:

- i. A Program Participant with annual CO₂ emissions from international flights greater than or equal to 500,000 tonnes (i.e., 500,000 metric tons) shall use a Fuel Use Monitoring Method as described in Appendix 2 of the CORSIA SARPs.
- ii. A Program Participant with annual CO₂ emissions from international flights of less than 500,000 tonnes (i.e., 500,000 metric tons) 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, of the CORSIA SARPs.
 1. In the case where the Program Participant has chosen to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), as described in Appendix 3 of the CORSIA SARPs, the calculation of the Program Participant's CO₂ emissions is performed by the CERT, once the Program Participant has input the required data.
 2. If, in the case where the Program Participant has chosen to use the ICAO CORSIA CO₂ Estimation and Reporting Tool (CERT), as described in Appendix 3 of the CORSIA SARPs, and FAA has approved its use in the EMP, the Program Participant's annual CO₂ emissions from international flights increases above the threshold of 500,000 tonnes (i.e., 500,000 metric tons) in 2019, it may continue to use the monitoring method in 2020 under the terms of this Agreement.
- iii. The Program Participant shall apply a fuel density value to calculate fuel mass where the amount of fuel uplift is determined in units of volume. The Program Participant 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 EMP along with a reference to the relevant Program Participant documentation.

- iv. The Program Participant, using a Fuel Use Monitoring Method, as defined in Appendix 2 of the CORSlA SARPs, shall determine the CO₂ emissions from international flights using the following equation:

$$CO_2 = \sum_f M_f * FCF_f$$

where:

CO₂ = CO₂ 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 CO₂/kg fuel) for Jet-A fuel / Jet-A1 fuel and 3.10 (in kg CO₂/kg fuel) for AvGas or Jet-B fuel.

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

- v. In performing and recording emissions monitoring, the Program Participant may use secondary sources as an alternative to avoid data gaps and address erroneous values if those secondary sources are specified in the Program Participant's EMP, as specified in Section 2.4.1(b)(i) of the CORSlA SARPs.
- vi. Where secondary sources specified in the EMP are not applied to avoid a data gap, the Program Participant using a Fuel Use Monitoring Method in Appendix 2 of the CORSlA SARPs shall fill data gaps using the ICAO CORSlA CO₂ Estimation and Reporting Tool (CERT).

Appendix C: Emission Monitoring Plan

As described in Section E.II, an Emissions Monitoring Plan is a collaborative tool between the FAA and the program participant that identifies the most appropriate means and methods for CO₂ emissions monitoring on an operator-specific basis, and also facilitates the reporting of information to the FAA.

Consistent with the dates specified in Section E.II of the CORSIA MRV Program, the following template should be used by Program Participants to develop their Emissions Monitoring Plan. Any resubmission of an Emissions Monitoring Plan should also use this template.

See Attachment 2 – U.S. CORSIA EMP Template

Appendix D: Emissions Report and Verification

Forms:

As described in Section E.III, Program Participants should use the forms below to submit their annual Emissions Report and optional CORSIA Eligible Fuels Annex to FAA.

See Attachment 3 – U.S. CORSIA ER Template

See Attachment 4 – U.S. CORSIA Eligible Fuels Annex

Process:

Program Participants should follow the below processes:

Reporting:

- A. The Emissions Report to be prepared each year shall address the Program Participant's CORSIA fuel use and emissions monitoring activities for the preceding year. For example, the Emissions Report to be prepared in 2021 shall address the Program Participant's CORSIA fuel use and emissions monitoring activities from 2020 and shall be referred to as the "2020 Emissions Report."
- B. If a Program Participant includes subsidiary aircraft operators or those within an airline holding company under its emissions MRV obligations as provided under Section E.I of the CORSIA MRV Program, the Program Participant shall also report disaggregated data relating to each separate aircraft operator by appending the report(s) specific to each entity to the main Emissions Report.
- C. The Program Participant shall have each annual Emissions Report and optional CORSIA Eligible Fuels Annex verified consistent with the terms specified in Section E.IV of the CORSIA MRV Program, and as described below.
- D. Emissions Reports and optional CORSIA Eligible Fuel Annexes should be submitted in line with the "Schedule of Reporting" specified in Section E.III of the CORSIA MRV Program.

Verification:

- A. The Program Participant shall engage a verification body for the verification of its annual Emissions Reports and optional CORSIA Eligible Fuel Annexes. The verification body shall be accredited to ISO 14065:2013 and the relevant requirements in Appendix 6 Section 2 of the CORSIA SARPs by a national accreditation body that is working in accordance with ISO/IEC 17011.
- B. The verification body shall conduct the verification according to ISO 14064-3:2006, and the relevant requirements in Appendix 6 Section 3 of the CORSIA SARPs.
- C. The Program participants shall require its verification body to submit to FAA a copy of the

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annual Emissions Report, including the optional CORSIA Eligible Fuels Annex, and associated Verification Report in line with the “Schedule of Reporting” specified in Section E.III of the CORSIA MRV Program.

- D. FAA shall perform an order of magnitude check of the Emissions Report(s) using the guidance material on the “order of magnitude check” as provided in the Environmental Technical Manual (Doc 9501), Volume IV. FAA shall notify the Program Participant of the conclusion of its order of magnitude check by no later than forty-five (45) days after FAA’s receipt of each of the Program Participant’s Emissions Reports.