EASA
European Union Aviation Safety Agency

ICF

ReFuelEU Aviation

Reporting Manual for Aircraft Operators and Verifiers

Session with Aircraft Operators

29 January 2025

Your safety is our mission.

An Agency of the European Union

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European Union Aviation Safety Agency

Agenda

Purpose of the manual

Deep dive into the template (column by column)

Understanding column H – Yearly non-tanked quantity

Fuel Monitoring Tool

- *Structure*
- *Demonstration*

Questions

Art. 8 ReFuelEU Aviation

When

will require aircraft operators to report data for the first time in 2025 (2024 data)

What

Art.8 information shall be presented in accordance with the templates laid down in the EASA website, based on Annex II

ReFuelEU Aviation Sustainability Portal | EASA (europa.eu)

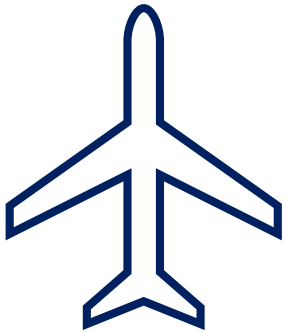
Data Sources

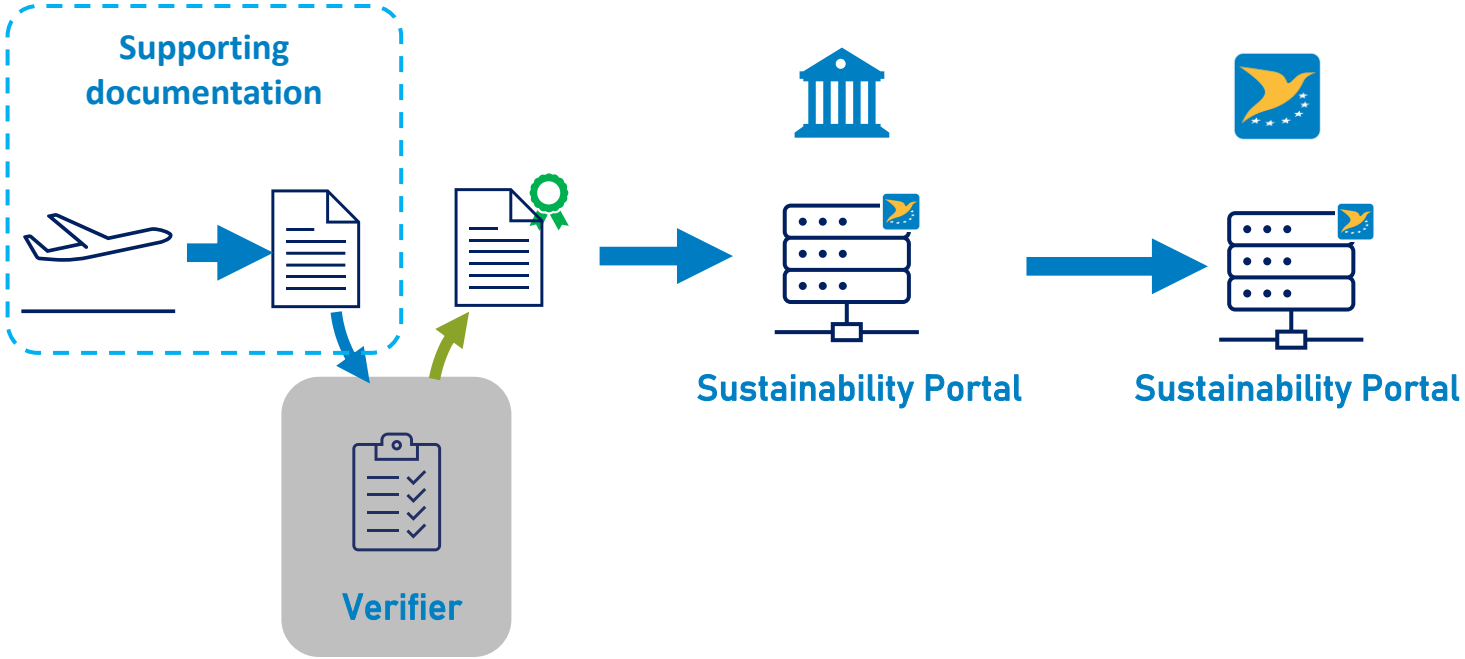
Need for certain clarifications in terms of data sources and how to obtain the necessary information that needs to be reported

Reporting Manual for Aircraft Operators and Verifiers

Art. 8 ReFuelEU Aviation

Art.8





Supporting documentation

ReFuelEU Aviation Regulation (EU) 2023/2405

- Interpretative guidelines on the application of the exemptions referred to in Article 5
- List of Aircraft Operators
- List of Union airports
- List of competent authorities of the Member States
- ReFuelEU Aviation Template for Aircraft Operators
- Manual for aircraft operators and verification bodies
- ReFuelEU Aviation Fuel Monitoring Tool

Today's deep dive

Purpose of the Manual

Aim:

→ ***Help AOs fill in correctly the ReFuelEU Aviation Template for Aircraft Operators (AO) as per Art. 8 and Annex II RFEUA***

→ ***Support verification process***

Scope

Deep dive into the RFEUA scope

- Aircraft Operators in scope
- Article 5 (2) and (3)
- Article 8
- Fuel categorisation

Columns

Data to report:

- Clarification on the expected data to be reported

Data Source:

- Explanation on the applicable sources

MRV

Overview of fuel MRV process to meet the RFEUA requirements

- Recommendation on the development of a monitoring process
- Data gaps
- Introduction of the RFEUA Fuel Monitoring Tool

ReFuel EU Aircraft Operators

RFEUA stakeholders	Definition	Link to the EC lists
Aircraft Operators	*"a person that operated at least 500 commercial passenger air transport flights, or 52 commercial all-cargo air transport flights departing from Union airports in the previous reporting period or, where it is not possible for that person to be identified, the owner of the aircraft."*	*https://transport.ec.europa.eu/document/download/8b972ae2-0236-4bbd-ad63-8368f3cceaa9_en?filename=ReFuelEU_list_operators.pdf*

Reportable Flights:

Flights that fall under the responsibility of the aircraft operator should be considered in the report. The ICAO designator, used as a call sign for air traffic control (ATC) purposes in box 7 of the flight plan, is the determining factor regardless of whether the aircraft is leased, owned or wet-leased.

REPORTABLE FLIGHTS	NON-REPORTABLE FLIGHTS
Passenger flights	Non-EU State flights
Cargo flights	Military flights, customs and police flights
Maintenance flights	Humanitarian, search and rescue flights
Diverted flights	Scientific research flights
Repositioning flights	Medical flights
Ferry flights	Fire-fighting flights
Flights performed in the framework of public service obligations	Training flights of the flight crew for their type license certification
	Circular flights
	Flights performed in exempted routes during the temporary period under Article 5(3) of RFEUA
	Repatriation flights, return flights, including readmission[10]

Table 1 - Summary table of reportable and non-reportable flights under Article 8 RFEUA.

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Template for aircraft operator reporting

Union Airport Name	ICAO Code of Union Airport	Total flights operated departing from the Union Airport (N° flights)	Total flights hours operated departing from the Union Airport (N° hours)	Yearly aviation fuel required (tonnes)	Yearly actual aviation fuel uplifted (tonnes)	Yearly non-tanked quantity (tonnes)	Yearly tanked quantity for fuel safety rules (tonnes)

Fuel Supplier	Batch Number	Amount Purchased (tonnes)	Category of eligible fuel for use in aircraft	Feedstock	Lifecycle emissions of the Eligible Fuel (gCO2eq/MJ)	Eligible Fuel (tonnes) claimed under EU ETS	Eligible Fuel (tonnes) claimed under CH ETS	Eligible Fuel (tonnes) claimed under CORSIA	Eligible Fuel (tonnes) claimed under other MBMs	Eligible Fuel (tonnes) not claimed

Template published EASA website

(current version contains formulas)

Understanding the template

→ Union Airport. Colum A and B

Union Airport Name	ICAO Code of Union Airport

What

The Aircraft Operator shall report flights on Union airport departing basis, as defined in Article 3(1).

Source

Aircraft operators should use the name of the Union airport reflected in the list of Union airports published by the Commission and updated on a yearly basis.21 Aircraft operators must ensure they use the latest version of the list.

List: https://transport.ec.europa.eu/document/download/ce8eae01-435e-4313-8d46-42463c3027ce_en?filename=ReFuelEU_list_airports.pdf

Understanding the template

→ Total flights Union Airport. Colum C

Total flights operated departing from the Union Airport (N° flights)

What

Aircraft operators shall report total flights covered under RFEUA, departing from Union Airports, excluding flights:

- Out of the scope of the reporting
- Flights from routes for which exemptions under Article 5(3) have been granted.

Source

The information should be extracted from the relevant internal flight management systems from the operator

The attribution of a flight to a specific reporting period is to be based on the time of departure measured in Coordinated Universal Time (UTC)

Understanding the template

→ Total flights hours. Colum D

Total flights hours operated departing from the Union Airport (N° hours)

What “block time” or “block-to-block” in hours.

Source The information should be extracted from the relevant internal flight management systems from the operator, measured in coordinated universal time.

Understanding the template

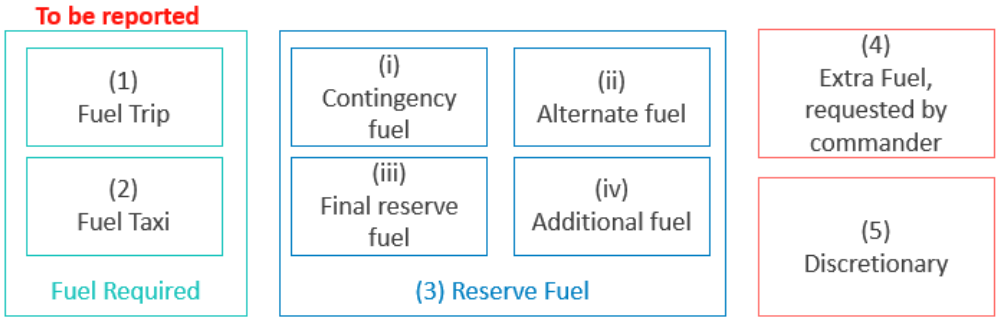
→ Yearly aviation fuel required. Colum E

Yearly aviation fuel required (tonnes)

What

Fuel required for the flights reported

Fuel required is taxi and trip fuel among other usable fuel that is required in the pre-flight calculation as per Commission Regulation (EU) No 965/2012, which includes:



Understanding the template

→ Yearly aviation fuel required. Colum E (continuation)

Yearly aviation fuel required (tonnes)

Source

Aircraft operators should use the **final version of the OFP (the version signed by the captain)** for each flight subject to RFEUA reporting requirements, to determine the fuel quantities that have been planned for taxi and trip fuel categories.

Understanding the template

→ Yearly actual aviation fuel uplifted. Colum F

Yearly actual aviation fuel uplifted (tonnes)

What

Aircraft operators should report aggregated quantities of fuel uplifted for all flights from each Union airport subject to the RFEUA reporting obligations.

Source

Based on one of the following:
a) the measurement by the fuel supplier, as documented in the fuel delivery notes or invoices for each flight; or
b) data from aircraft onboard measurement systems recorded in the mass and balance documentation, in the aircraft technical log or transmitted electronically from the.
Same fuel density as used for operational and safety reasons, which may be either a standard value of 0.8 kg per litre or the actual density value.

Understanding the template

→ Yearly non-tanked quantity. Colum G

Yearly non-tanked quantity (tonnes)

What

Refers to the 90% uplifting of the “yearly aviation fuel required” (trip and taxi out) at a departing Union airport, and not to the 100%

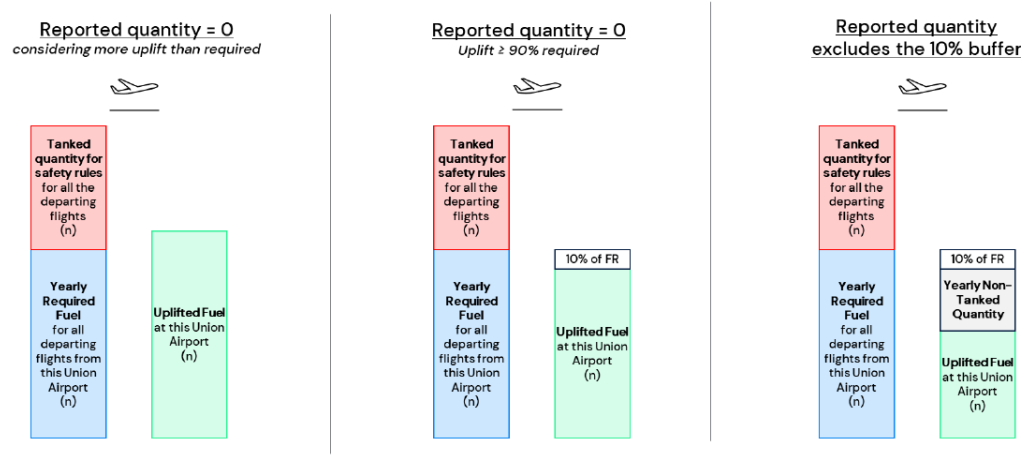


Figure 3 - Illustration of Yearly Non-Tanked quantity reporting in the reporting template.

Understanding the template

→ Yearly non-tanked quantity. Colum G

Yearly non-tanked quantity (tonnes)

Source

Column G of the Template for aircraft operator reporting has been formulated as follows to reflect the fuel amount that is missing to reach the 90% threshold (Delta).

$$=\mathbf{If}\ (\mathbf{FU} \geq \mathbf{90\%} * \mathbf{FR}\ ,\mathbf{0}\ ,\mathbf{90\%} * \mathbf{FR} - \mathbf{FU})$$

Where:
FR= Fuel Required
FU= Fuel Uplifted

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Purpose of the manual

Deep dive into the template (column by column)

Understanding column H – Yearly tanked quantity

Fuel Monitoring Tool

- *Structure*
- *Demonstration*

Questions

Understanding Fuel categories

- The fuel categorisation is a crucial element of the RFEUA reporting requirements
- Fuel categorisation is **reflected in each operational flight plan** of the Aircraft Operator
- Fuel information to be provided
  - Minimum legally required fuel (taxi, trip, contingency, ALT, final reserve, additional fuels)
  - Discretionary fuel
  - Extra fuel
  - Other fuel not clearly defined as “safety fuel” and beyond the 10% buffer → **economic tankering**

Understanding Fuel categories

In the below example, as per EASA AMC definition, Extra fuel quantities shall only consider fuel as per EASA AMC definition **without economic tankering**

Basic fuel scheme principle	ICAO Annex 6 fuel categorisation	EASA AMC fuel categorisation	EASA AMC definition[1]	RFEUA categorisation
Extra fuel	Not a separate category in ICAO Annex 6, but, for the purposes of aligning with EASA's categorisation, considered as fuel accounted for the operating conditions related to 4.3.6.2 of ICAO Annex 6[2]	Extra fuel	Include anticipated delays or specific operational constraints that can be predicted	
Other fuel	N/A	N/A	N/A	Economic tankering

[1] The below definitions apply to basic fuel scheme to Class A aeroplanes without variations. If other aeroplanes or variations are used, the aircraft operator must refer to the applicable EASA fuel scheme.
[2] For the purposes of RFEUA, trip fuel to be considered as defined in the ICAO Annex 6 but excluding the fuel *accounted for the operating condition 4.3.6.2* of the Annex, which according to EASA fuel policy is considered as extra fuel.

Understanding the template

→ Yearly tanked quantity for fuel safety rules. Colum H

Yearly tanked quantity for fuel safety rules (tonnes)

What

$$Column\ H = YTFJA(n-1) - YTFJD(n) + OFD(n-1)$$

With: $OFD(n-1) = YFR(n-1) - AFC(n-1)$

YTFJA(n-1) = Yearly Tanked Fuel Justified Arriving
YTFJD(n)= Yearly Tanked Fuel Justified Departing
OFD(n-1) = Operational Fuel Divergence
YFR(n-1) = Yearly Fuel Required
AFC(n-1) = Actual Fuel Consumption

(n-1) means all flights arriving at the Union airport
(n) means all flights departing from the Union airport

Understanding the template

→ Yearly tanked quantity for fuel safety rules. Colum H

Yearly tanked quantity for fuel safety rules (tonnes)

Source

Datapoint	Subset	Source
Yearly Fuel Required (n-1)		OFP (n-1)
Yearly Tanked Fuel Duly Justified Arriving (n-1)		OFP (n-1)
Yearly Tanked Fuel Duly Justified Departing (n)		OFP (n)
Actual Consumption(n-1)	Block-Off Fuel	OFP/Technical log (n-1)
	Block-On Fuel	OFP/Technical log (n-1)

(n-1) means all flights arriving at the Union airport
(n) means all flights departing from the Union airport

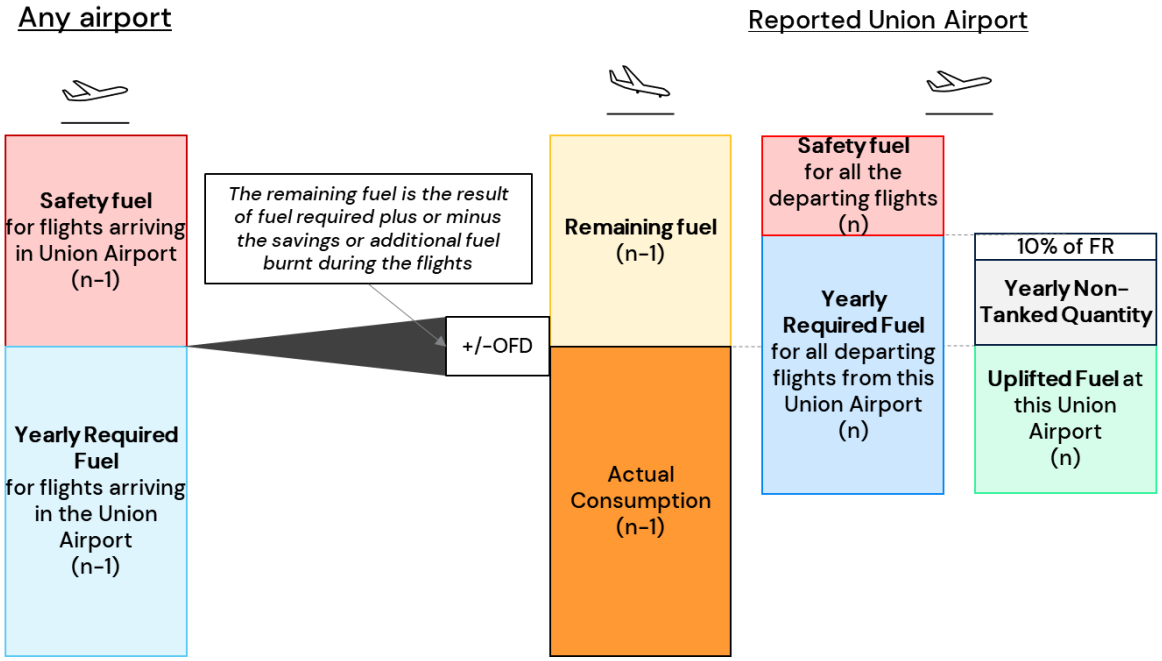
Actual consumption should be understood as:
$$AFC = Block\ Off\ Fuel - Block\ On\ Fuel$$

Tankering justification under Art. 5(2) - Column H

The Manual:

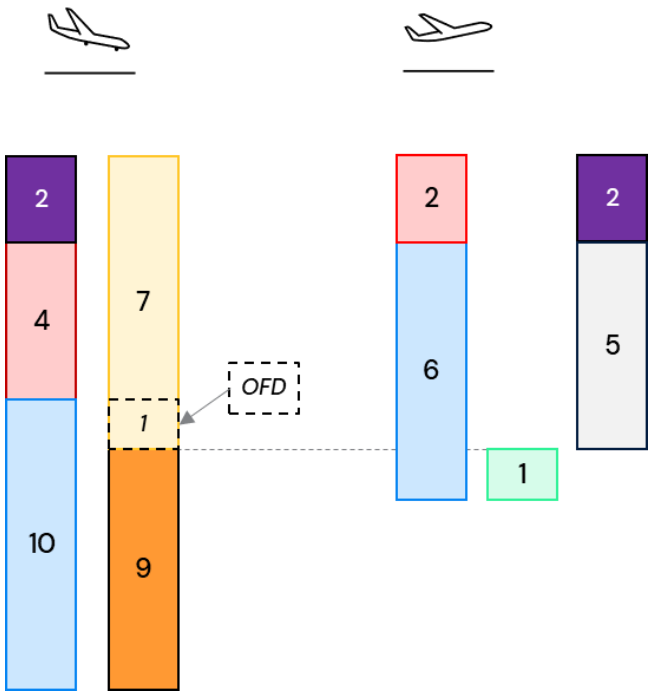
- Defines the Operational Fuel Divergence (OFD) that enables to account for the operational reality
- Requires the AO to **report all previous flights** (arriving flights) at a UA in case of non-compliance at a UA level

If all flight information is accurately reported in the *RFEUA Fuel Monitoring Tool*, it automatically calculates Column H



$$Column\ H = YTFJA_{n-1} - YTFJD_n + OFD_{n-1}$$

Example of column H calculation



→ Column H:

$$Column\ H = YTFJA_{n-1} - YTFJD_n + OFD_{n-1}$$

YTFJ= Yearly tanked fuel justified

- → **YTFJ:**
  - → It should NOT contain any economic tankering
  - → If Extra fuel is used in the YTFJ supporting documentation is required
- → OFD: in this case, the AO made fuel savings during the flight that is accounted in the OFD

Column H= (4-2) + (10-9) = 3

- → Overall, the AO is able to justify 3 tonnes in column H

Page reference in the Manual: *Figure 7, page 20*

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Deep dive into the template (column by column)

Understanding column H – Yearly non-tanked quantity

Fuel Monitoring Tool

- *Structure*
- *Demonstration*

Questions

Recommended RFEUA Fuel Monitoring Tool

Objectives:

- → Gathering all the raw data for the RFEUA reporting requirements
- → Create a common template for all AO and verification bodies
- → Automatically feed in the ReFuelEU Aviation Template for Aircraft Operators

While this document is stated in the RFEUA Manual for AO and verifiers, it does not constitute a legally binding document.
Its aim is to simplify the reporting duties and verification process of airlines under RFEUA.
Every AO willing to use this template is free and encouraged to customise and make this tool its own

Monitoring tab structure:

Flight Operational Data	Planned Required Fuel	Uplifted Fuel	Planned tanked quantity for fuel safety rules	Actual operational consumption	Scope Checks	Previous flight information	Supporting Documentation

- Taxi Fuel (tonnes)
- Trip Fuel (tonnes)
- Aviation Fuel Required (tonnes)

Under each section, detailed data are required

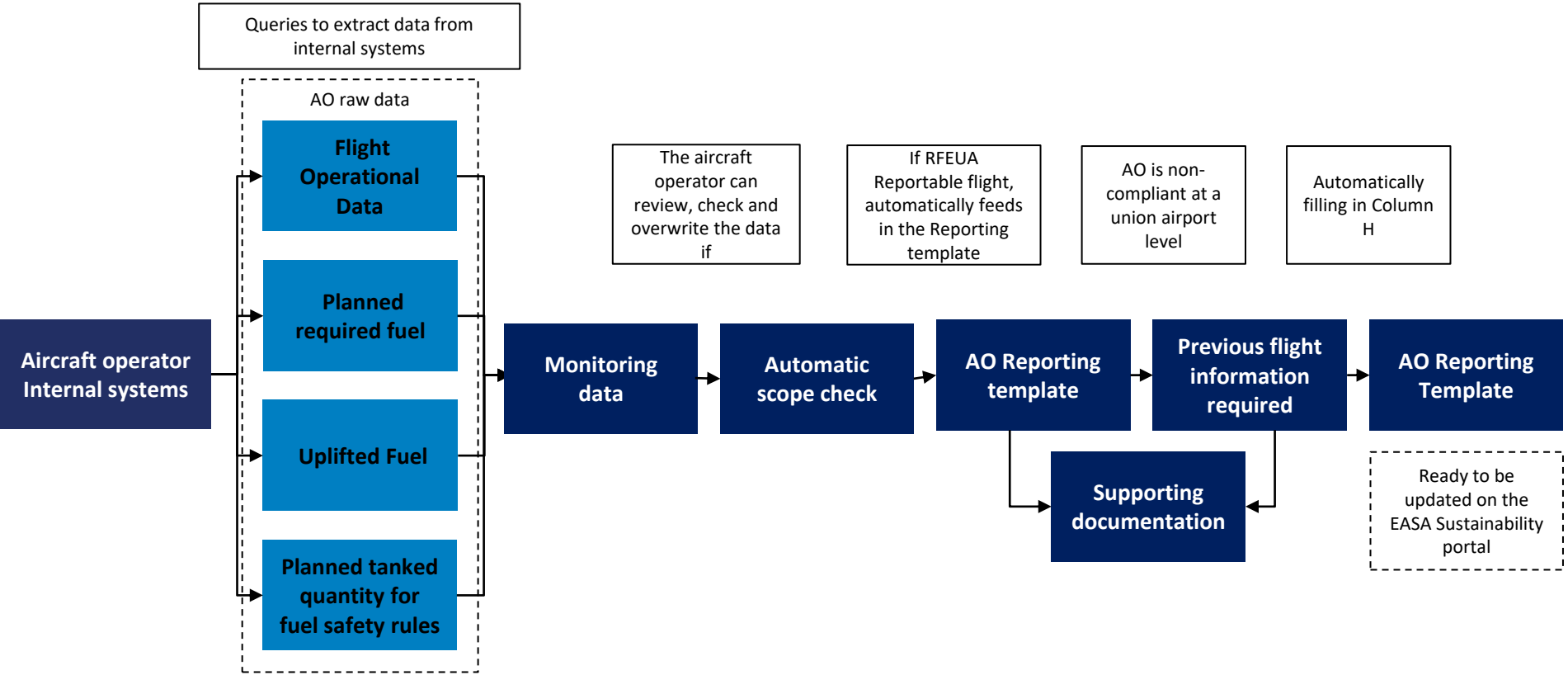
MRV process

- The Manual provides recommendation for completeness of data.
- All flights departing or arriving at a Union airport of all aircraft should be monitored.
- Recommended to implement internally a process that enables the easy review of the different flights operated to and from a Union airport, especially focusing on the sequence performed by a single aircraft.
- **Data gaps**
  - If >5 % of total reportable flights and their previous flights, AO to state the % and engage with the authority to address the issue

Overall, the *ReFuel Aviation monitoring tool* is a step towards a complete RFEUA MRV process for the aircraft operator as it enables:

- Monitoring from the aircraft operator
- Reporting to the sustainability portal
- Verification from verification bodies

The RFEUA fuel monitoring tool flow



AO Assumptions

Aircraft operator manual inputs		
Operator ICAO Call Sign	XXX	
Reporting Period	2024	

AO Fuel scheme definition
Content: **For aircraft operators not following the EASA fuel scheme defined in the AMC**, this tab povides the source for further

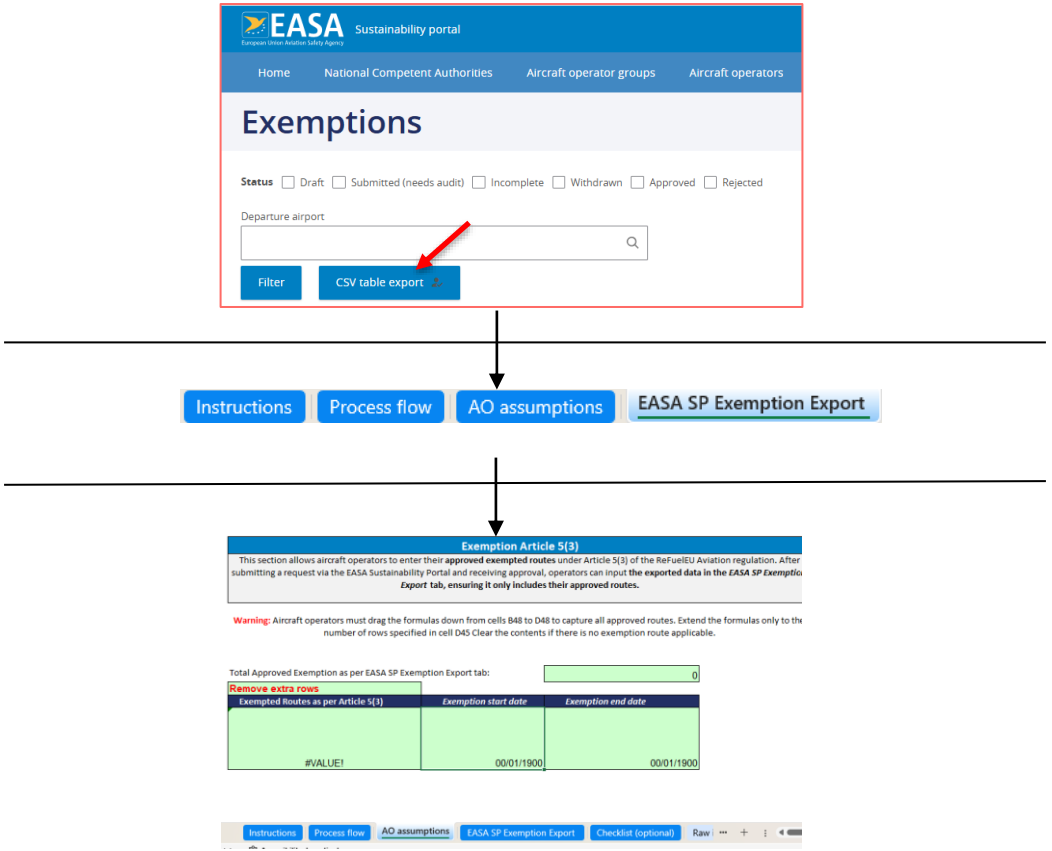
Exemption Article 5(3)
This section allows aircraft operators to enter their **approved exempted routes** under Article 5(3) of the ReFuelEU Aviation regulation. After submitting a request via the EASA Sustainability Portal and receiving approval, operators can input **the exported data in the *EASA SP Exemption Export* tab, ensuring it only includes their approved routes.**

Exemption Step by step exclusion

Extract list of 5(3) exemptions directly from the Sustainability Portal

Copy paste it in the **EASA SP Exemption Report** tab

The tool will automatically exclude the exempted routes from the final report



Raw data input

Raw Data input:
This tab serves as a raw data input feed, directly sourced from system queries, before any verification or intervention by the aircraft operator. It should contain only data extracted from the aircraft operator's internal systems, allowing the operator to trace changes and backtrack any queries to the raw data.

Monitoring data

- → This monitoring table serves as a working tab for the aircraft operator.
- → Once all the data is correctly input in the *Raw Input* tab, **the monitoring data should reflect exactly the same data. If not, ensure you drag down the formulas sufficiently to cover the last row of your input data.**

Reporting flow and structure:							
Flight Operational Data	Planned Required Fuel	Uplifted Fuel	Planned tanked quantity for fuel safety rules	Actual operational consumption	Scope Checks	Previous flight information	Supporting Documentation

AO Reporting template

- When all the checks are completed in the *Monitoring Data* tab, the aircraft operator should be able to directly extract the data from this tab and input it into the "official" ReFuelEU reporting template to be uploaded to the EASA sustainability portal.
- Some formulas in this tab rely on allocated name ranges. Please cross-check and update them as needed in certain cases.

The AO reporting template tab can be copy pasted in the ReFuelEU Template to upload on the Sustainability portal

Union Airport Name	ICAO Code of Union Airport	Total flights operated departing from the Union Airport (Nº flights)	Total flights hours operated departing from the Union Airport (Nº hours)	Yearly aviation fuel required (tonnes)	Yearly actual aviation fuel uplifted (tonnes)	Yearly non-tanked quantity (tonnes)	Yearly tanked quantity for fuel safety rules (tonnes)
#CALC!	#CALC!	0	0.00	0.00	0.00	0.00	
#N/A		0	0.00	0.00	0.00	0.00	
#N/A		0	0.00	0.00	0.00	0.00	
#N/A		0	0.00	0.00	0.00	0.00	

Union Airport Name	ICAO Code of Union Airport	Total flights operated departing from the Union Airport (Nº flights)	Total flights hours operated departing from the Union Airport (Nº hours)	Yearly aviation fuel required (tonnes)	Yearly actual aviation fuel uplifted (tonnes)	Yearly non-tanked quantity (tonnes)	Yearly tanked quantity for fuel safety rules (tonnes)
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	
						0.00	

Data Gaps

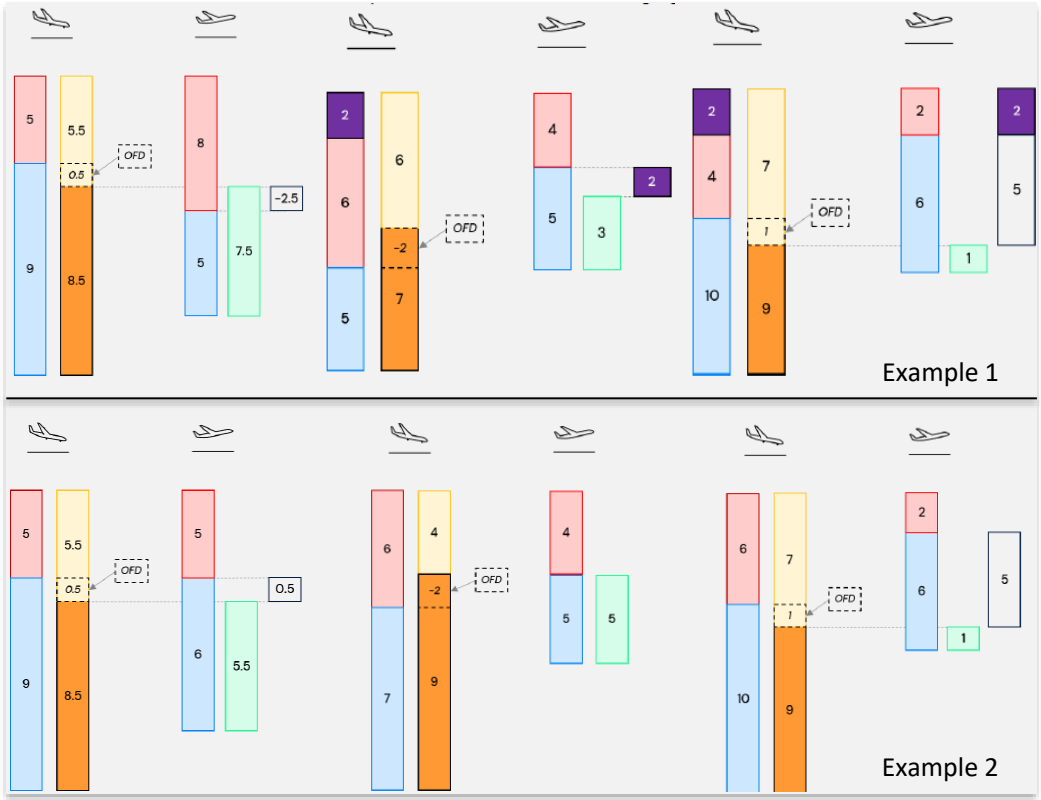
This tab aims at providing a placeholder for the aircraft operator to gather and justify missing data.

In this tab:

- → Aircraft operators can provide explanations on why data is missing and highlight biggest challenges
- → Verification bodies can use this tab to verify and validate/negate the report
- → Challenges highlighted in this tab will be reviewed and used to adapt and improve the manuals and the tools

Percentage Of Data Gaps			
Number of Flights Impacted	**Type of data missing**	**Reason**	**Mitigation Process**

Examples of the Manual applied to the Tool



The examples from the Manual were applied to the tool

Yearly aviation fuel required (tonnes)	Yearly actual aviation fuel uplifted (tonnes)	Yearly non-tanked quantity (tonnes)	Yearly tanked quantity for fuel safety rules (tonnes)
18.00	28.00	0.00	
16.00	11.50	2.90	0.50
12.00	26.00	0.00	
17.00	11.50	3.80	5.50

Version History

Version history		
Version:	**Roll out date**	**Correction**
Version 1.1	04/12/2024	**Union Airports list updated**, with airport names and codes for: ESMA, ESSB, LFOB, LFSB, LIME, & LIRA
Version 1.2	22/01/2025	**- Instructions:** Monitoring Data and Union Airports (Lkups) explanation updated. **- AO Assumption cell B5:** "Reporting ~~Year~~ Period" - **Raw Input column R**: Formula changed for Aviation Fuel Quantity to account for Tonnes and not Kg. **-Raw Input column Q Block Time (hrs):** Updated formula to calculate block hours, ensuring accurate calculation of time differences for flight arriving next day. - **Monitoring Data column AQ to AY:** Updated to reflect if previous flight information is missing. New feature in column AY to identify missing information. - **AO Reporting Template column H:** Update, Column H turns to zero for each Union airport where any of the flight under consideration or previous flight has missing information.

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Questions

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