

ANNUAL EMISSIONS MONITORING PLAN

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Flying Circus Germany AG
< Commission list has not yet been published >
New monitoring plan

If your competent authority requires you to hand in a signed paper copy of the monitoring plan, please use the space below for signature:

Date

Name and Signature of
legally responsible person

GUIDELINES AND CONDITIONS

- 1 Directive 2003/87/EC, as amended by Directives 2004/101/EC and 2008/101/EC (hereinafter "the EU ETS Directive") requires aircraft operators who are included in the European Greenhouse Gas Emission Trading Scheme (the EU ETS) to monitor and report their emissions and tonne-kilometre data, and to have the reports verified by an independent and accredited verifier.
- 2 The Monitoring and Reporting Guidelines (hereinafter "the MRG") as set out by Commission Decision 2007/589/EC, as amended by Commission Decisions 2009/87/EC and 2009/339/EC, define further requirements for monitoring and reporting.

Annex XIV of the MRG provides for activity-specific guidelines for determination of emissions from aviation activities as listed in Annex I to Directive 2003/87/EC. This annex specifies the content of the monitoring plan. The same annex specifies further:

"The competent authority may require the aircraft operator to use an electronic template for submission of the monitoring plan. The Commission may publish a standardised electronic template or file format specification. In this case the competent authority shall accept the use by the aircraft operator of this template or specification, unless the competent authority's template requires at least the same data input."

- 3 This file constitutes the said template developed by the European Commission. Under certain conditions as described below, it may have been amended to a limited extent by a Member State's competent authority.

Before you use this file, please carry out the following steps:

- a **Make sure you know which EU Member State is responsible for administering you** (the aircraft operator to which this monitoring plan refers). The criteria for defining the administering Member State are set out by Art. 18a of the EU ETS Directive. A list specifying the administering Member State for each aircraft operator can be found on the Commission's website (see below).
 - b Identify the Competent Authority (CA) responsible for your case in that administering Member State (there may be more than one CA per Member State) .
 - c Check the CA's webpage or directly contact the CA in order to find out if you have the correct version of the template. The template version is clearly indicated on the cover page of this file.
 - d Some Member States may require you to use a more sophisticated system, such as Internet-based forms instead of a spreadsheet. In this case the CA will provide further information to you.
- 4 This Monitoring Plan must be submitted to your Competent Authority to the following address:

< German Competent Authority example; please check on Commission website for your CA's address:
<http://ec.europa.eu/environment/climat/pdf/aviation/contacts.pdf> >

Umweltbundesamt, Deutsche Emissionshandelsstelle /
Federal Environment Agency, German Emissions Trading
< please note the requirements for the electronic communication with the German Emissions Trading Authority, see also
http://www.dehst.de/cln_090/nn_476212/DE/DEHSt/elektronische__Kom

- 5 The Competent Authority may contact you to discuss modifications to your monitoring plan to ensure the accurate and verifiable monitoring and reporting of annual emissions, according to the principles set in the MRG. Once approved, the Competent Authority will send you an approved Monitoring Plan, that you will use as the methodology to determine annual emissions and implement your data acquisition and handling activities and control activities. It will serve also as a reference for verification of your annual emissions report.
- 6 Any substantial change in your monitoring methodology shall be notified to the competent authority without undue delay after you become aware of it or could in all reasonableness have become aware of it, unless otherwise specified in the monitoring plan, as set in the Monitoring and Reporting Guidelines.
- 7 Contact your Competent Authority if you need assistance to complete your Monitoring Plan. Some Member States have produced guidance documents which you may find useful.
- 8 **Confidentiality statement-** The information submitted in respect of this application may be subject to public access to information requirements, including Directive 2003/4/EC on public access to environmental information. If you consider that any information you provide in connection with your application should be treated as commercially confidential, please let your Competent Authority know. You should be aware that under the provisions Directive 2003/4/EC, the Competent Authority may be obliged to disclose information even where the applicant requests that it is kept confidential.

Information sources:

EU Websites:

EU-Legislation: <http://eur-lex.europa.eu/en/index.htm>
EU ETS general: http://ec.europa.eu/environment/climat/emission/index_en.htm
Aviation EU ETS: http://ec.europa.eu/environment/climat/aviation_en.htm
Monitoring and Reporting in the EU ETS: http://ec.europa.eu/environment/climat/emission/mrg_en.htm

Other Websites:

< German Competent Authority example >
Website of the German Competent Authority: <http://www.dehst.de/>
Aviation-specific pages: http://www.dehst.de/cln_090/nn_484538/EN/Aviation/Aviation_node.html?_nnc=true

Helpdesk:

< German Competent Authority example >
Hotline of the German Competent Authority: +49 - (0)30 - 89 03 - 50 50
E-mail: emissionshandel@uba.de

How to use this file:

In order to minimize your workload, you may choose to enter only in one monitoring plan all the data which is needed identically in both monitoring plans (emissions and tonne-kilometre). This choice has to be made in input field 2(c). It is recommended to use the annual emission monitoring plan as the primary document, as this requires generally the more complete information. If you do not send both documents to the Competent Authority at the same time, you have to fill in this data in the first document.

It is recommended that you go through the file from start to end. There are a few functions which will guide you through the form which depend on previous input, such as cells changing colour if an input is not needed (see colour codes below).

In several fields you can choose from predefined inputs. For selecting from such a "drop-down list" either click with the mouse on the small arrow appearing at the right border of the cell, or press "Alt-CursorDown" when you have selected the cell. Some fields allow you to input your own text even if such drop-down list exists. This is the case when drop-down lists contain empty list entries.

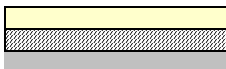
Colour codes and fonts:

Black bold text:

Smaller italic text:

This is text provided by the Commission template. It should be kept as it is.

This text gives further explanations. Member States may add further explanations in MS specific versions of the template.



Yellow fields are input fields

Shaded fields indicate that an input in another field makes the input here irrelevant.

Grey shaded areas should be filled by Member States before publishing customized version of the template.

Further guidance as provided by the Member State:

Please refer also to the guidance document "Guidance for the Aviation Industry - Monitoring and Reporting Annual Emissions and Tonne km Data for EU Emissions Trading"

< <http://www.emissieautoriteit.nl/mediatheek/hulpmiddelen/aviation/EU%20ETS%20Aviation%20guidance%20version%201.0%2028052009.pdf>>.

IDENTIFICATION OF THE AIRCRAFT OPERATOR AND DESCRIPTION OF ACTIVITIES

2 Identification of Aircraft Operator

(a) Please enter the name of the aircraft operator:

This name should be the legal entity carrying out the aviation activities defined in Annex I of the EU ETS Directive

Flying Circus Germany AG

(b) Unique Identifier as stated in the Commission's list of aircraft operators:

This identifier can be found on the list published by the Commission pursuant to Article 18a(3) of the EU ETS Directive.

< Commission list has not yet been published >

(c) Please choose the primary monitoring plan:

Explanation: There are several fields in this template that are identical in the template for the annual emissions monitoring plan, like address information, and information regarding the aircraft fleet. In order to avoid unnecessary duplication of reporting, you may select here either the annual emission monitoring plan (this file) or the monitoring plan for tonne-kilometre as the primary document. As soon as you have made your selection, you have to fill in the requested information only once in the selected document.

Monitoring Plan for Annual Emissions

(d) Is this a new or an updated monitoring plan?

Note: If you are using this file to update a previous version, you have to select the current file as the primary document under 2(c). If this is an updated monitoring plan, your competent authority may allow that you fill in only new information instead of the complete data.

New monitoring plan

<<< If you have selected the t-km monitoring plan under 2(c), click here to proceed to section 3a >>>

(e) If different to the name given in 2(a), please also enter the name of the aircraft operator as it appears on the Commission's list of operators:

The name of the aircraft operator on the list pursuant to Article 18a(3) of the EU ETS Directive may be different to the actual aircraft operator's name entered in 2(a) above.

Flying Circus GmbH

(f) Please enter the unique ICAO designator used in the call sign for Air Traffic Control (ATC) purposes, where available:

The ICAO designator should be that specified in box 7 of the ICAO flight plan (excluding the flight identification) as specified in ICAO document 8585. If you do not specify an ICAO designator in flight plans, please select "n/a" from the drop down list and proceed to 2(g).

ZYX

(g) Where a unique ICAO designator for ATC purposes is not available, please provide the aircraft registration markings used in the call sign for ATC purposes for the aircraft you operate.

If a unique ICAO designator is not available, enter the identification for ATC purposes (tail numbers) of all the aircraft you operate as used in box 7 of the flight plan. (Please separate each registration with a semicolon.) Otherwise enter "n/a" and proceed.

(h) Please enter the administering Member State of the aircraft operator

pursuant to Art. 18a of the Directive.

Germany

(i) Competent authority in this Member State:

In some Member States there is more than one Competent Authority dealing with the EU ETS for aircraft operators. Please enter the name of the appropriate authority, if applicable. Otherwise choose "n/a".

Environment Agency

(j) Please enter the number and issuing authority of the Air Operator Certificate (AOC) and EU Operating Licence if available:

Air Operator Certificate:

D-321 AOC

AOC Issuing authority:

Germany - Air Navigation Services

EU Operating Licence:

D-654 EG

Issuing authority:

Germany - Air Navigation Services

(k) Please enter the address of the aircraft operator, including postcode and country:

Address Line 1

Am Flughafen 1

Address Line 2

City

Frankfurt

State/Province/Region

Hessen

Postcode/ZIP

60549

Country

Germany

Email address

(l) If different to the information given above in part (k), please enter the contact address of the aircraft operator (including postcode) in the administering Member State, if any:

Address Line 1
 Address Line 2
 City
 State/Province/Region
 Postcode/ZIP
 Country
 Email address

Please select

(m) Please provide details of the ownership structure of your firm and whether you have subsidiaries or parent companies

Please include in your description the unique ICAO designator of your subsidiaries or parent company, and indicate the administering Member State of these entities, if applicable. Add attachments to your submission as necessary to show a diagram of your ownership structure.

Parent company: (see also our website at http://www.flyingcircus-air.de/about_us/organisational_structure.html)
 Flying Circus AG, ICAO code: ABC, administered by UK

subsidiaries: (see also our website at http://www.flyingcircus-air.de/investor_relations/factfile/legal_structure.html)
 1. Flying Circus Austria, ICAO code: ZYA, administered by Austria
 2. Flying Circus Bahamas, ICAO code: ZYB, administered by UK
 3. Flying Circus Cargo, ICAO code: ZYC, administered by Germany

Please note that your Administering Member State may ask you further details about contact addresses and company structure (see worksheet "MS specific content").

(n) Description of the activities of the aircraft operator falling under Annex I of the EU ETS Directive

Please specify whether you are a commercial or non-commercial air transport operator, whether you operate scheduled, non scheduled flights or both and, whether the scope of your operations cover only the EU or also non EU countries.

Operator status

Commercial

Commercial air transport operators: Please attach a copy of Annex I of your AOC to this monitoring plan as evidence.

Scheduling of flights

Scheduled and non-scheduled flights

Scope of operations

Flights inside and outside the EU

(o) Please provide further description of your activities as necessary.

As a member of Air Alliance, Flying Circus Germany AG has standardised code share agreements with all other members of Air Alliance. (See also our website at http://www.flyingcircus-air.de/info_and_services/partners.html)

We operate a hybrid hub & spoke / point-to-point model with our main hub in Frankfurt (FRA). Our passenger flights are mostly scheduled, with approximately 60% taking place in the EU.

Non-scheduled passenger flights are primarily charter flights to the Asia-Pacific Region operating on a point to point model. Cargo flights are usually ad-hoc i.e. non-scheduled.

We own a number of aircraft that have been leased out permanently or short-term and are not operated by us. We also operate a number of leased-in aircraft.

3 Contact details and Address for Service

(a) Who can we contact about your monitoring plan?

It will help us to have someone who we can contact directly with any questions about your monitoring plan. The person you name should have the authority to act on your behalf. This could be an agent acting on behalf of the aircraft operator.

Title:	Kapitän
First Name:	Jürgen T.
Surname:	Kork
Job title:	Manager ETS
Organisation name (if acting on behalf of the aircraft operator):	
Telephone number:	+49 69 1234568
Email address:	juergent.kork@flyingcircus-air.de

[<<< If you have selected the t-km monitoring plan under 2\(c\), click here to proceed to section 4 >>>](#)

(b) Please provide an address for receipt of correspondence

You must provide an address for receipt of notices or other documents under or in connection with the EU Greenhouse Gas Emissions Trading Scheme. Please provide an electronic address and a postal address within the administering Member State.

Title:	Kapitän
First Name:	Jürgen T.
Surname:	Kork
Email address:	juergent.kork@flyingcircus-air.de
Telephone number:	+49 69 1234568
Address Line 1:	Am Flughafen 2
Address Line 2:	
City:	Frankfurt
State/Province/Region:	Hessen
Postcode/ZIP:	60549
Country:	Germany

[<<< Click here to proceed to section 4 "Emission sources" >>>](#)

EMISSION SOURCES and FLEET CHARACTERISTICS

4 About your operations

Under 2(c) you have chosen:

Monitoring Plan for Annual Emissions

(a) Please provide a list of the aircraft types operated at the time of submission of this monitoring plan.

The list should include all aircraft types (by ICAO aircraft type designator - DOC8643), which you operate at the time of submission of this monitoring plan and the number of aircraft per type, including owned aircraft, as well as leased-in aircraft. You are required to list only aircraft types used for carrying out activities falling under Annex I of the EU ETS Directive.

You may use the second column to further specify sub-types of that aircraft type, if relevant for defining the monitoring methodology. This can be useful e.g. if there are different types of on-board measurement systems, different data transmission systems (e.g. ACARS) etc.

For each aircraft type you have to specify which fuels will be used (which "source streams" will be associated with the emission sources). You can do that by entering "1" or "TRUE" in the appropriate fields. Leave the field blank if the fuel is not used.

Please note: A part of the data to be entered in this subsection is identical to the information in the t-km data monitoring plan. However, more information is needed for emission monitoring. Thus the data has to be filled in here. You may reduce your workload by referring from the t-km monitoring plan to the information given here.

Date of submission of monitoring plan:

9-6-2009

Generic aircraft type (ICAO aircraft type designator)	Sub-type (optional input)	Number of aircraft operated at time of submission	jet kerosene (Jet A1 or Jet A)	jet gasoline (Jet B)	aviation gasoline (AVGas)	Biofuel	other alternative fuel
B744	Boeing 747-400	8	1				
A306	Airbus A-300 FC 600	12	1				
A320	Airbus A-320	24	1				
B732	Boeing 737-200	5	1				
DC6	Douglas Liftmaster	1			1		
DH8C	De Havilland Dash 8 (300)	15	1				

Please continue on a separate sheet if required.

(b) Please provide an indicative list of additional aircraft types expected to be used.

Please note that this list should not include any of the aircraft listed in table 4(a) above. Where available, please also provide an estimated number of aircraft per type, either as a number or an indicative range.

Generic aircraft type (ICAO aircraft type designator)	Sub-type (optional input)	Estimated number of aircraft to be operated	jet kerosene (Jet A1 or Jet A)	jet gasoline (Jet B)	aviation gasoline (AVGas)	Biofuel	other alternative fuel
A380		5-10	1				

Please continue on a separate sheet if required.

[<<< If you have chosen the t-km monitoring plan, click here to continue with section 4\(g\). >>>](#)

(c) Please provide details about the procedure to be used for defining the monitoring methodology for additional aircraft types.

While this monitoring plan in general defines the monitoring methodology for the aircraft already in your fleet at the time of submission of the monitoring plan to the competent authority (see point 4(a)), a defined procedure is needed to ensure that any additional aircraft including those listed under 4(b) will be properly monitored as well. The items specified below should ensure that a monitoring methodology is defined for any aircraft type operated.

Title of procedure	Define monitoring methodology for additional aircraft
Reference for procedure	Chapter 11 of Flying Circus Operations Manual
Brief description of procedure	<p>Whenever new aircraft are added to the fleet, either through lease-in or purchase, we will assign (i) a fuel monitoring method (A or B); (ii) default data source for fuel uplift and fuel contained in tank; (iii) a default method for determining density; and (iv) a method for transmitting data into our operations management system OMS. Storage of data in OMS and retrieval from the system will be done as outlined in sections 4(e) and (f) of this monitoring plan.</p> <p>(i) Choice of method A or B: We will use method B as the default for new and leased-in aircraft. We already use method B for our existing modern fleet (see section 6(b) of this monitoring plan for the exception) - covering both own and leased-in aircraft - so this will give us a consistent approach. We will require new lessors to use method B. This will also apply to aircraft acquired from other operators that are fully integrated into our normal operations. We will only deviate from this approach in the exceptional case that our fleet is extended due to organisational changes (e.g. upon acquisition of another operator who use Method A). If this is the case, we will continue to use the method that was used previously until the systems and operations are fully integrated. See also section 6 (b) of this monitoring plan.</p> <p>(ii) Choice of data source for fuel uplift and fuel contained in tank: Fuel contained in tank will always be measured using on-board equipment. All newly acquired aircraft will be equipped with accurate on-board fuel measurement devices that automatically display fuel in terms of mass. The use of such equipment reduces the risk of manual typing errors in these additional steps. Therefore, we will use on-board systems as the data source for fuel uplift for new aircraft. In the case of newly leased-in aircraft types, we will use on-board measurement devices as the data source, for the same considerations made above. As we do not intend to acquire or lease any further old-timers into our fleet, fuel quantities will only be recorded using on-board measurement equipment.</p> <p>(iii) Density: As outlined in (ii) above, all new aircraft types will have on-board fuel measurement devices that display fuel in terms of mass on the basis of temperature measurement, see also 6 c). As we will always use on-board devices for measuring fuel uplift and fuel contained in the tank, no separate measurement of density will be necessary for additional aircraft types. Because we will always use on-board fuel readings and no separate density measurement, we do not expect any special circumstances for additional aircrafts as described in the Monitoring Guidelines (Annex XIV section 2.1)</p> <p>(iv) Transmission method: For aircraft equipped with ACARS, flight specific data are transmitted to OMS via an ACARS data link. As this electronic link reduces the risk of manual input error, we always use it if available (see also the attached document fuel_method_B_ACARS.pdf). For aircraft not equipped with ACARS, data are recorded by the pilot in the technical flight log. After a flight, the pilot sends flight documentation (including flight logs) to our headquarter in Frankfurt, where the data is input manually into OMS by the operations management department. (see also the attached document fuel_method_B_manual.pdf).</p> <p>All of the above decisions will be made and documented by the Operations Management Department per aircraft type.</p>
Post or department responsible for data maintenance	Operations Management Department
Location where records are kept	IT servers: Flying Circus Gemany AG main office in Frankfurt paper records / contracts: Flying Circus Gemany AG main office in Frankfurt (legal department & controlling)
Name of system used (where applicable).	Operations Management System (OMS) - see 4(e)

(d) Please provide details about the systems, procedures and responsibilities used to track the completeness of the list of emission sources (aircraft used) over the monitoring year.

The items specified below should ensure the completeness of monitoring and reporting of the emissions of all aircraft used during the monitoring year, including owned aircraft, as well as leased-in aircraft.

Title of procedure	Ensuring completeness of list of aircraft
Reference for procedure	Chapter 10 of Flying Circus Operations Manual
Brief description of procedure	<p>The Operations Management System (OMS) is the key IT system to track all flights performed by ZYX. It is a standard software package provided by OMS software corporation. Our currently used version is OMS v.3.2. The figures of the Systems.pdf (attachment, see section "Management") show OMS's linkage with other datasources used by ZYX. See also section 4(e) of this monitoring plan for more on data input into OMS.</p> <p>Description: The master data of the Operations Management System (OMS) contains information on all owned and leased-in aircraft operated under ICAO codes ZYX. This information comprises amongst others the type of aircraft and a unique identifier (registration markings). Data input of master data: the Fleet Management Department is responsible for keeping an updated list of aircraft in the fleet management system which contains a system for leasing contracts and one for asset accounting. Newly acquired aircraft are added to asset accounting as soon as they are on our balance sheets; leased-in aircraft with our lessors are added as soon as the contract is made or, if they are leased in on an ad-hoc basis, they are added as soon as the first flight is made. This information is transmitted to the operations department, where it is manually fed into the OMS as part of the master data. We are currently investigating a change to our systems landscape to remove the need for a manual update of the fleet list - this is one of the points in our improvement plan (see also section 11 of this monitoring plan). Updates to the master data are made. Note that we keep a record of historical data in OMS, such that information on aircraft no longer in use is retained in OMS to guarantee the completeness of the list of emission sources for each reporting period.</p> <p>Key risk: Failure to update the OMS master data, leading to aircraft not being monitored, even though they are flying under the ICAO designator "ZYX"- this risk applies particularly to leased-in aircraft.</p> <p>Control activities: We check on a monthly basis whether the flights (and corresponding aircraft) we are invoiced by Eurocontrol are registered in OMS.</p> <p>Note: If the commission has approved the Eurocontrol tool we will primarily use this tool for control activities instead of the invoices. Before the use of this tool as control instrument we will check and document if there are discrepancies between data on the basis of invoices from Eurocontrol and the Eurocontrol tool.</p>
Post or department responsible for data maintenance	Fleet Management Coordinator: maintenance of aircraft list Operations Management Department: input of data into OMS IT department: responsible for security, backup etc.
Location where records are kept	IT servers: Flying Circus Gemany AG main office in Frankfurt paper records / contracts: Flying Circus Gemany AG main office in Frankfurt (legal department & controlling)
Name of system used (where applicable).	Operations Management System (OMS); Fleet Management System

(e) Please provide details about the procedures to monitor the completeness of the list of flights operated under the unique designator by aerodrome pair.

Please detail the procedures and systems in place to keep an updated detailed list of aerodrome pairs and flights operated during the monitoring period as well as the procedures in place to ensure completeness and non duplication of data.

<u>Title of procedure</u>	Ensure completeness of list of flights
<u>Reference for procedure</u>	Chapter 12 of Flying Circus Operations Manual
<u>Brief description of procedure</u>	<p>Description: All flights we operate under our ICAO designator are stored in our central IT system OMS. Flight-related information in OMS with ETS relevance:</p> <ul style="list-style-type: none"> - date - flight number - type of flight (e.g. training, test, etc.) - aerodrome of departure and arrival (ICAO code and full name) - number of passengers aboard (by type: male/female/infant, paying/non-paying/crew, etc.) - net and gross weight of freight and mail - aircraft registration markings <p>Note that we do not generally collect per-flight data in OMS for leased-out aircraft that do not fly under our ICAO designator. In case we do collect per-flight data (as happens regularly with our DC6 aircraft), the per-flight data sets also contain the ICAO designator of the lessee, which allows us to filter them out.</p> <p>Input into system: Flight data is recorded per flight in on-board systems (if an aircraft is equipped with these) and technical flight logs (in all cases). How and when this data is input into OMS depends on whether or not an aircraft has on-board ACARS:</p> <ul style="list-style-type: none"> - aircraft with ACARS: direct datalink into OMS. Data is usually transmitted electronically at block-on and after take-off block-off. (see also attached diagram fuel_method_B_ACARS.pdf). - aircraft not equipped with ACARS: flight data is transferred manually from the (paper) technical flight log into OMS. This manual input is done at our main office in Frankfurt, after the pilot has sent flight documentation, including technical logs, there. (See also attached diagrams fuel_method_B_manual.pdf and fuel_method_A.pdf). <p>Note that our existing Airbus A-320 will successively be equipped with ACARS during maintenance checks (D-check). This process started in 2007 and applies to two A320 per year, i.e. in 2009 four A320 have ACARS, in 2010 six A320 will have ACARS, etc. See also section 7(d) of this monitoring plan. When all A-320 are equipped with ACARS only for DC 6 and DH8C data are by pilot in the technical flight log.</p> <p>Other OMS interfaces include:</p> <ul style="list-style-type: none"> - electronic interface with airport systems [this is relevant for t-km data] - electronic interface with planning data - for flight plans (aircraft types and aerodromes of departure / arrival) and booking information. This data will be replaced with actual data (either from ACARS or manually) if actual data is different from planning data. However, planning data is not completely overwritten such that deviations can be traced. - "master" data: airports, aircraft. <p>The master list of airports (see also monitoring plan for tonne-kilometer 5 c) includes more airports than we fly to regularly, to cover also redirected landings (e.g. if unforeseen weather conditions prevent landing at our planned arrival airport). This master list is updated at regular intervals by the Operations Management Department, and immediately if a new destination is opened.</p> <p>Extraction of data from OMS: After the reporting period, data is retrieved from the OMS. We filter flights by airport pair to exclude non-EU flights (see also 6 f to exclude exempt flights like training or test flights). This is done by the operations management department. (see also diagram annual_emissions_data_flow.pdf)</p>
	<p>Key risks: If manual input into OMS: (i) technical flight logs sent to the main office could get lost, so that flights under our ICAO designator "ZYX" are not registered in OMS; (ii) manual input error when typing in data could lead to wrong identification of airport. If electronic link into OMS: failure of on-board system; failure of link between on-board system and OMS.</p> <p>Control activities: We check on a monthly basis whether the flights we are invoiced by Eurocontrol are registered in OMS. Additionally we control the performance (number of flights, kilometres flown, maintenance) of aircraft in our fleet. Inconsistencies in the data are tracked down and corrected. To ensure that data input manually into OMS is correct, we perform regular sampling checks.</p>
<u>Post or department responsible for data maintenance</u>	Operations Management Department IT system, backup, etc: IT department
<u>Location where records are kept</u>	Records of the source system and backups of OMS are kept at our operations department in Frankfurt.
<u>Name of system used (where applicable).</u>	Operations Management System (OMS)

(f) Please provide details about the procedures for determining whether flights are covered by Annex I of the Directive, ensuring completeness and avoiding double counting.

Please detail the systems in place to keep an updated detailed list of flights during the monitoring period which are included/excluded from EU ETS, as well as the procedures in place to ensure completeness and non-duplication of data.

Title of procedure	Ensure completeness of list of flights covered by Annex I of the Aviation ETS Directive
Reference for procedure	Chapter 12 of Flying Circus Operations Manual
Brief description of procedure	<p>Flight information (aircraft type, aerodrome of departure/arrival, flight type/etc.) is recorded per flight and transmitted into OMS either electronically or manually as described in section 4(e). For the annual emissions report, an export from OMS provides a list of all flights under our ICAO designator "ZYX" in the reporting period. Non-Annex I flights could be excluded using filters within the database. Filters are selected manually following the definitions laid out in our operations manual:</p> <ul style="list-style-type: none"> - aircraft type: We own a number of small aircraft (e.g. Piper P28A, MTOW < 5.7 t) used for training pilots. - geographical boundaries: non-EU to non-EU, using information on aerodrome of departure and arrival (see also 4 e) - circular flights: using information on aerodrome of departure and arrival. - type of flight (marked on flight plan, marker set by pilot): government, test, training <p>No further Annex I exceptions apply to our operations. Note that we do not generally collect per-flight data in OMS for leased-out aircraft that do not fly under our ICAO designator. In case we do collect per-flight data (as happens regularly with our DC6 aircraft), the per-flight data sets also contain the ICAO designator of the lessee, which allows us to filter them out.</p> <p>Extraction of data from OMS: After the reporting period, data is retrieved from the OMS. We filter flights by flight type to exclude exempt flights (see also 4 e to exclude non-EU flights). This is done by the Operations Management Department.</p> <p>Key risks: Pilot mistakenly sets a special flight marker, so that this flight is filtered out even though it should not be. Type of flight is wrongly marked in OMS, leading to the mistaken exclusion of a flight that does not fall under the Annex I exceptions.</p> <p>Control activities: There are specific guidelines in the operations manual for our pilots as to when to apply which "special flight" flag. These guidelines were revised on the basis of the commission decision on the interpretation of Annex I activities (see http://ec.europa.eu/environment/climat/aviation_en.htm). Note that we only expect to make few exempt flights. These will be identified and will be checked individually by the Operations Management Department. To further check if the number of flights is plausible, we compare our total number of flights with those invoiced by Eurocontrol.</p>
Post or department responsible for data maintenance	Operations Management Department
Location where records are kept	as above - see 4(e)
Name of system used (where applicable).	OMS - as 4(e) above

(g) Please provide an estimate/prediction of the total annual fossil CO₂ emissions for Annex 1 activities.

The figure should only include those flights, which are covered by EU ETS.

1.800.000 tonnes CO₂

5 Eligibility for simplified procedures for small emitters

- (a) Please confirm whether you operate fewer than 243 flights per period for three consecutive four-month periods; or operate flights with total annual fossil CO₂ emissions lower than 10 000 tonnes per year?

Operators who are considered to be small emitters may choose to use simplified procedures to estimate fuel consumption using tools implemented by Eurocontrol or another relevant organisation. In this case, complete the worksheet "simplified calculation" instead of the worksheet "calculation".

<input type="radio"/> Yes	<input checked="" type="radio"/> No
---------------------------	-------------------------------------

<<< If you have ticked "No", please continue directly to section 6. >>>

- (b) ~~If you have ticked "Yes" in response to 5(a), do you intend to use simplified procedures to estimate fuel consumption?~~

<input type="radio"/> Yes	<input type="radio"/> No
---------------------------	--------------------------

<<< If you have ticked "No", please continue directly to section 6. >>>

- (c) ~~If you have ticked "Yes", please provide information to support your eligibility for the simplified calculation procedures and then proceed directly to the tab "Simplified Calculation" (Section 9).~~

Provide suitable information to support the fact that you operate fewer than 243 flights per period for three consecutive four-month periods or that your annual emissions are lower than 10 000 tonnes of CO₂ per year. Where necessary, you can attach further documents (s. Section 13).

[<<< Click here to proceed to section 9 "Simplified Calculation" >>>](#)

CALCULATION OF CO₂ EMISSIONS

<<< Go to Section 9 if eligible for simplified calculation >>>

6 Activity data

(a) Please specify the methodology used to measure fuel consumption for each aircraft type.

In each case, the method chosen should provide for the most complete and timely data combined with the lowest uncertainty without incurring unreasonable costs. Note that the Aircraft types are automatically taken from section 4(a).

Method A Actual fuel consumption for each flight (tonnes) = Amount of fuel contained in aircraft tanks once fuel uplift for the flight is complete (tonnes) - Amount of fuel contained in aircraft tanks once fuel uplift for subsequent flight is complete (tonnes) + Fuel uplift for that subsequent flight (tonnes)

Method B Actual fuel consumption for each flight (tonnes) = Amount of fuel remaining in aircraft tanks at block-on at the end of the previous flight (tonnes) + Fuel uplift for the flight (tonnes) - Amount of fuel contained in tanks at block-on at the end of the flight (tonnes)

Generic aircraft type (ICAO aircraft type designator) and sub-type	Method (A/B)	Data source used to determine fuel uplift	Methods for transmitting, storing and retrieving data
B744 Boeing 747-400	Method B	On-board measuring equipment	Transmitted electronically from aircraft to operator
A306 Airbus A-300 FC 600	Method B	On-board measuring equipment	Transmitted electronically from aircraft to operator
A320 Airbus A-320	Method B	On-board measuring equipment	Transmitted electronically from aircraft to operator
B732 Boeing 737-200	Method B	On-board measuring equipment	Transmitted electronically from aircraft to operator
DC6 Douglas Liftmaster	Method A	As measured by fuel supplier	Recorded in aircraft technical log
DH8C De Havilland Dash 8 (300)	Method A	On-board measuring equipment	Recorded in aircraft technical log
A 380 Airbus	Method B	On-board measuring equipment	Transmitted electronically from aircraft to operator
A 320 Airbus A-320	Method B	On-board measuring equipment	Recorded in aircraft technical log
	Please select	Please select	Please select
	Please select	Please select	Please select

Please continue on a separate sheet as required.

(b) If the chosen methodology (Method A/Method B) is not applied for all aircraft types, please provide a justification for this approach in the box below.

Except for the DC6 and DH8C fleet we use methodology B to determine flight specific fuel consumption. For the DC6 and DH8C fleet methodology A is in use. These aircraft have been incorporated in our fleet in connection with a merger with ABC airline in 2002. The standard procedure of fuel consumption determination within ABC has been methodology A and has not been changed since then. Systems for DH8C will be integrated with our own OMS by March 2011 - from then on method B will apply here too. We do not intend to change the method for our DC6 because method A meets the typical operations of an oldtimer.

Note on table in section 6(a) above: Not all of our Airbus A-320 are yet equipped with ACARS. Where this is not the case, data is recorded in aircraft technical log and transmitted manually to the system. This manual recording / transmission is gradually being phased out - see also section 4(c) of this monitoring plan.

(c) Complete the following table with information about the systems and procedures to monitor fuel consumption per flight in both owned and leased-in aircraft.

The procedure must include the selected tiers, a description of the measurement equipment, and the procedures for recording, retrieving, transmitting and storing information.

Title of procedure	Determining fuel consumption per flight
Reference for procedure	Chapter 4 of Flying Circus Operations Manual; see also process flows in section 13 (<fuel_method_A.pdf,> fuel_method_B_ACARS.pdf and fuel_method_B_manual.pdf)
Brief description of procedure	<p>Description: Fuel consumption data is ultimately stored in OMS. It is measured, recorded and transmitted into OMS per flight. How this is done depends on the aircraft's on-board equipment and on-board systems, as described below. See sections 4(e) and (f) of this monitoring plan for a description of how data is retrieved from the OMS. For considerations on uncertainties and tiers, see section 7(d).</p> <p>Measurement of fuel data:</p> <p>(i) Aircraft using on-board equipment for measuring fuel uplift and fuel left in tanks - method B: For each flight the fuel level (at block-on and block-off) and fuel uplift is measured with on-board measurement devices. Conversion from litres to kg happens automatically within the system, based on automatic temperature readings that are measured at the same time as fuel levels. The pilot compares fuel uplift measured by on-board devices with fuel slips received from the fuel supplier for safety reasons. If he detects differences between the two values above a threshold of 5 % the pilot checks the fuel slip for inconsistencies and he checks the on-board measurement system. If needed he takes further steps as described in the aircraft's safety manual as the aircraft will not be allowed to start if on-board devices do not function properly. In any case values as measured on-board will be used.</p> <p>(ii) Aircraft using on-board equipment for measuring fuel uplift and fuel left in tanks - method A (DH8C)</p> <p>As (i), with the exception that timing for measuring fuel left in tanks is different: the pilot notes measures fuel levels after fuel uplift is complete.</p> <p>(iii) Aircraft using on-board measurement only for fuel left in tanks but not for of fuel uplift - this currently only applies to one aircraft type (DC6, method A)</p> <p>In this case fuel uplift data is taken from the fuel slip, i.e. as measured by the fuel supplier. If the fuel slip does not state the uplift in units of mass (kg), the pilot converts the volume stated on the fuel slip to kg (see section 6 (f) of this monitoring plan). He then records the mass of the uplift in the technical flight log. To measure fuel left in tank (levels after fuel uplift is complete), the pilot takes a reading of on-board measurement devices (in liter), converts the volume to masse (see section 6 f) and records these values on the technical flight log.</p> <p>Recording and transmitting of data to OMS:</p> <ul style="list-style-type: none"> - Aircraft equipped with ACARS: Fuel level and fuel uplift data is automatically recorded in the aircraft system and is transmitted via an ACARS datalink to OMS. Data is transmitted before and after a flight (see fuel_method_B_ACARS.pdf). - Aircraft not equipped with ACARS: Fuel level and fuel uplift are measured and data is recorded in the aircraft technical log by pilot. Technical logs are sent to our headquarter in Frankfurt after the flight and fuel consumption data is entered manually into OMS by the operations department (see fuel_method_B_manual.pdf). - Both leased-in and own aircraft are treated in exactly the same manner. This is because we always require leased-in aircraft to follow our own procedures, and to link data flows into our systems. <p>Storage of data in OMS:</p> <ul style="list-style-type: none"> - OMS stores the following per flight number: fuel levels (according to the formula for method A or B) as well as uplifts per flight. - To calculate total fuel use in a reporting period, we will extract the fuel level registered as "initial" in OMS for a particular flight and replace it with the fuel level registered as "after" from the previous flight. This way we are in line with method B, and fuel use from the APU is always included. For the aircraft using method A, we will proceed analogously when extracting data from the OMS. - exceptional cases: if an aircraft performs an activity other than a flight (e.g. major maintenance involving the emptying of the tanks after a monitored flight), we will substitute the figures in the calculation formula according to section 2.21 Annex XIV MRG. <p>Key risks: The same risks apply as in section 4 (e) for the transmission of data from technical logs.</p> <p>Control activities: Within OMS, the fuel consumption data per flight is calculated and checked for consistency with historical fuel consumption for the specific aircraft and aerodrome pair. If the calculated fuel consumption of a flight exceeds the typical range (95 %-percentile) it is flagged in the system. Where this is the case, we investigate the cause according to a standardised quality assurance procedure (mainly checking if typing errors made by pilot or made by Operations Management Department had happened).</p> <p>If wrong data was stored in OMS changes are fully traceable. If we are unable to find a cause and fuel consumption might be underestimated, we will fill the data gaps with the tool provided by Eurocontrol as described in section 10 of this monitoring plan and highlight them as data gaps in the emissions report.</p>
Post or department responsible for data maintenance	Fuel Management Department: invoices Operations Management Department: recording data in OMS
Location where records are kept	OMS and flight related documents: see 4(e) Fuel invoices: archived at our operations department in Frankfurt
Name of system used (where applicable).	Data stored in OMS: as 4(e) above Measurements on board: aircraft system Fuel uplift: on-board measurement and fuel supplier data

(d) Please specify the method used to determine the density used for fuel uplifts and fuel in tanks, for each aircraft type.

Actual density values should be used unless it is shown to the satisfaction of the Competent Authority that actual values are not available and a standard density factor of 0.8 kg/l shall be applied.

Generic aircraft type (ICAO aircraft type designator) and sub-type	Method to determine actual density values	Justification for using standard value if measurement is not feasible, and other remarks
B744 Boeing 747-400	Actual density in aircraft tanks	
A306 Airbus A-300 FC 600	Actual density in aircraft tanks	
A320 Airbus A-320	Actual density in aircraft tanks	
B732 Boeing 737-200	Actual density in aircraft tanks	
DC6 Douglas Liftmaster	Actual density of uplift	see also 6 f and 6 g
DH8C De Havilland Dash 8 (300)	Actual density in aircraft tanks	
	Please select	
	Please select	
	Please select	
	Please select	

Please continue on a separate sheet if required.

(e) Please specify the source of temperature-density correlation tables, if applicable.

Only complete this section if you have selected at least once "Temperature of uplift" in table 6(d) above.

Our on-board measurement devices automatically calculate mass from volume. The correlation between density and temperature that is measured is inbuilt into the equipment.
--

(f) Complete the following table with information about the procedures for measurement of the density used for fuel uplifts and fuel in tanks, in both owned and leased-in aircraft.

The procedure must include a description of the measurement instruments involved, or if measurement is not feasible, justification for applying the standard value.

Title of procedure	Measurement of fuel density
Reference for procedure	Chapter 4 of Flying Circus Operations Manual
Brief description of procedure	<p>Except in DC 6 in all aircrafts fuel is measured only with on-board equipment including temperature measurement (see also 6 a, c, e). In this case, the on-board equipment automatically makes the conversion from litres to kg. See section 7 for the accuracy of the equipment as stated by the manufacturer.</p> <p>In case fuel uplift data is taken from the fuel slip (only DC6) , we use the following procedure: - use the density provided by the fuel supplier - if this is not available our operations manual currently requires the pilot to use a standard value of 0.8 kg / l (see also 6 g). The pilot also use the standard value to convert fuel level (see 6 c).</p> <p>To improve on this procedure such that it will match the MRG requirements, we are currently negotiating with fuel suppliers in Anyland with a view that fuel density or fuel temperature will be recorded on the fuel invoice.</p>
Post or department responsible for data maintenance	Fuel Management Department: data maintenance Pilot (per flight): recording primary data, calculations Operations Management Department: recording data in OMS
Location where records are kept	as 6(c) above
Name of system used (where applicable).	as 6(c) above

(g) If applicable, provide a list of deviations from the general methodologies for determining fuel uplifts/fuel contained in the tank and density for specific aerodromes.

Where necessary due to special circumstances, such as fuel suppliers who cannot provide all of the required data for a certain methodology, a list of deviations from the general methodologies should be given for specific aerodromes. For example, if a fuel supplier at a specific aerodrome cannot provide the actual density data, specify the alternative approach proposed. Please list aerodromes using their ICAO designator, separated by semicolons.

Type of deviation	Justification of special circumstances	Aerodromes for which deviation applies
actual density is unavailable	fuel supplier cannot supply actual density nor temperature. And there is no temperature measurement at the aerodrome.	GHI Airport in Anyland, JKL Airport in Anyland, MNO Airport in Anyland

Please continue on a separate sheet if required.

7 Uncertainty Assessment

(a) Where on-board systems are used for measuring fuel uplifts and the quantity remaining in the tank, please provide uncertainty associated with the on-board measurement equipment.

Where fuel uplifts are determined solely on the invoiced quantity of fuel or other appropriate information provided by the supplier, no further proof of uncertainty level is required. Uncertainty values should be taken from the calibration certificate, where applicable, or otherwise from equipment manufacturer's specification. An estimate using the ranges in the drop-down list should be used only if more precise values are not available.

Generic aircraft type (ICAO aircraft type designator) and sub-type	Uncertainty of measurement of fuel remaining in the tank	Are fuel uplifts determined solely by the invoiced quantity of fuel or other appropriate information provided by the supplier?	If no:		
			Are on-board measurement devices for fuel uplift supported by calibration certificates?	Measurement equipment uncertainty (+/-%)	Location of evidence of routine checks (if no calibration certificate)
B744 Boeing 747-400	< 4 %	No	No	3,5	aircraft maintenance, Frankfurt
A306 Airbus A-300 FC 600	< 4 %	No	No	3,5	aircraft maintenance, Frankfurt
A320 Airbus A-320	<2.5%	No	No	2	aircraft maintenance, Frankfurt
B732 Boeing 737-200	<2.5%	No	No	2	aircraft maintenance, Frankfurt
DC6 Douglas Liftmaster	< 7 %	Yes	Please select		
DH8C De Havilland Dash 8 (300)	< 5,5 %	No	No	5	aircraft maintenance, Frankfurt
		Please select	Please select		
		Please select	Please select		
		Please select	Please select		
		Please select	Please select		

Please continue on a separate sheet if required.

(b) Please identify the main sources of uncertainty and their associated levels of uncertainty for your fuel consumption measurements.

You are not required to carry out a detailed uncertainty assessment, provided that you identify the sources of uncertainties and their associated levels of uncertainty. Uncertainties for other components than those listed in 7(a) may be based on conservative expert judgement.

Source of uncertainty	Level of uncertainty	Comments on level of uncertainty
aircraft type DC6 (on-board measurement of fuel remaining in the tank, volume in liter)	< 7 %	According to judgement from aircraft maintenance experts, level of uncertainty of on-board measuring devices for the determination of fuel (volume in liter) is below +/- 7%, and there is no systematic bias. This source of uncertainty applies only to fuel left in tanks; see also section 7(d)
aircraft type DC6 (density)	< 2,5%	estimation (DC6 generally fly in central Europe, therefore we assume that the use of standard density don't cause higher uncertainty)
fuel supplier measurement within EU (only DC 6)	< 0,5%	fuel supplier accuracy standards for fuel mass in kg (see 7 d) and for fuel volume in liter (see 6 g)
other aircrafts (on-board measurement of fuel consumption, mass in kg)	2 - 5,5 %	See 7 a & d, according to manufacturer's specification for the determination of fuel in mass (including density) and judgement from aircraft maintenance experts for uncertainty of measurement of fuel remaining in the tank
		Because we only use standard emissions factors, the uncertainty of our annual reported emissions will derive entirely from the uncertainty of our fuel consumption.

Please continue on a separate sheet if required.

(c) Please provide details about the uncertainty threshold you intend to meet for each source stream (fuel type).

For each source stream (fuel type), specify the estimated annual CO₂ emission from the source stream, whether the source stream is considered to be a major, minor or de minimis source and the corresponding measurement uncertainty threshold (representing the maximum measurement uncertainty during the monitoring year) you will meet.

Please use the blank fields in column C to name any alternative and/or biofuels which you will use. State the estimated fossil CO₂ emissions arising from each listed fuel type, in order to provide evidence for the correct tier choice. Please ensure that the total emissions are consistent with the answer given in section 4(g)

	Source stream (Fuel type)	Estimated annual fossil CO ₂ emissions from each fuel	% of total estimated CO ₂ emissions	Source stream classification	Fuel consumption uncertainty	Tier number
Std Fuels	Jet kerosene (Jet A1 or Jet A)	1780000	98,9%	Major	<2.5%	2
	Jet gasoline (Jet B)		0,0%	Please select	Please select	
	Aviation gasoline (AvGas)	20000	1,1%	Minor	<5.0%	1
Alternatives			0,0%	Please select	Please select	
			0,0%	Please select	Please select	
			0,0%	Please select	Please select	
			0,0%	Please select	Please select	
Biofuels			0,0%	Please select	Please select	
			0,0%	Please select	Please select	
			0,0%	Please select	Please select	
			0,0%	Please select	Please select	
Total for all fuel types:		1.800.000	100,0%			
Estimate given under section 4(g):		1.800.000				
Difference:		0	0,0%			

(d) Complete the following table with information about the procedure used to ensure that the total uncertainty of fuel measurements will comply with the requirements of the selected tier.

The procedure must demonstrate that the uncertainty of fuel measurements will comply with the requirements of the selected tier, referring to calibration certificates of measurement systems, national laws, clauses in customer contracts or fuel suppliers' accuracy standards.

Title of procedure	Ensure compliance with allowed uncertainty of fuel measurement
Reference for procedure	Chapter 22 of Flying Circus Operations Manual
Brief description of procedure	<p>I. Major source stream: jet kerosene</p> <p>All fuel level are measured using on-board measurement systems. To ensure the accuracy of individual measurements, the following apply:</p> <ul style="list-style-type: none"> - To ensure that on-board measurement equipment functions properly, we have twin devices. If one of the two is not working properly, on-board systems give an automatic error message. Whenever this happens, they are replaced with new ones. - On-board systems are checked regularly during maintenance cycles. They are replaced during D checks. The equipment manufacturers guarantee a maximum uncertainty as stated in 7(c), keeping in check the systematic error. We also have certificates of routine checks of the operation of on-board measurement systems as approved by the competent civil aviation authority a part of airworthiness requirements. To estimate the overall uncertainty we used the formulae for error propagation laws in Annex I section 7.1 of the Monitoring and Reporting Guidelines and the following considerations: <ul style="list-style-type: none"> - The uncertainties of separate measurements on a single aircraft are interdependent because the same equipment is used. - By contrast, measurements from different aircraft are uncorrelated as they use different systems. There is a small remaining systematic bias if measurements are taken using devices based on the same physical principles. Experts from aircraft maintenance assured us that this is minimal and does not dominate over the statistical evening out from the large number of measurement events. As result we estimate that the overall uncertainty is considerably lower than 2,5 %. <p>II. Minor source stream: Aviation gasoline (only DC6)</p> <p>On-board measurement systems: see description for jet kerosene Fuel supplier measurement, minor source stream (aviation gasoline):</p> <ul style="list-style-type: none"> - To ensure that the fuel uplift as measured by fuel suppliers meets the required accuracy, we have special clauses in fuel supply contracts. - All of our flights made with our DC6 aircraft are between EU airports where fuel suppliers must meet the standards for allowable errors of the European measuring instruments directive (MID). <p>As described for the major source stream we estimate that the uncertainty of the on-board measurement of the DC6 does not dominate over the statistical evening out from the large number of measurement events. Additionally the low uncertainty of the measurement by the fuel supplier contribute to an overall uncertainty below 5 %.</p>
Post or department responsible for data maintenance	Operations Management Derpartment
Location where records are kept	as 6(c) above Maintenance records are kept at our main office in Frankfurt.
Name of system used (where applicable).	as 6(c) above

(e) Complete the following table with information about the procedure used to ensure regular cross-checks between uplift quantity as provided by invoices and uplift quantity indicated by on-board measurement.

Where deviations are observed, corrective actions must be taken in accordance with Annex I section 10.3.5 of the Monitoring and Reporting Guidelines.

Title of procedure	Cross-check fuel uplift
Reference for procedure	Chapter 26 of Flying Circus Operations Manual
Brief description of procedure	<p>i) On-board measurement of fuel uplift + ACARS: see 6 there are no further cross-checks (automatic data transmission is validated, no typing errors due to automatic data transmission and recording)</p> <p>ii) On-board measurement of fuel uplift + No-ACARS: We perform cross-checks between invoices and fuel uplift as stored in OMS (from on-board measurements). Such cross-checks are done regularly through random samples, covering all suppliers and aircraft. If we find a discrepancy of more than 0,5 % in one of these sample checks, we check the technical flight log and fuel slip of the flight where the discrepancy occurred. If we find an typing error, we trigger the process to manually change the fuel uplift entry in OMS. Such changes are traceable.</p> <p>iii) fuel uplift on the basis of the invoices + No-ACARS: We perform the same cross-checks as described above. If needed we contact the supplier to resolve the problem. If we fail to find a source for the discrepancy, the fuel uplift will be manually flagged in OMS, and if fuel consumption could be underestimated we will reconstruct the fuel consumption from this flight leg using Pagoda (data gap approach).</p> <p>In case the fuel uplift in OMS is flagged as implausible (from automatic consistency check within OMS - see 7(c) above), cross-checks with fuel slips and/or technical logs are always made.</p>
Post or department responsible for data maintenance	Controlling Department; Operations Management Derpartment
Location where records are kept	as 6(c) above
Name of system used (where applicable).	as 6(c) above

8 Emission factors

(a) Please confirm that you will use the following standard emission factors for commercial standard aviation fuels

Type of aviation fuel	Default IPCC value (tonnes CO ₂ /tonne fuel)	Confirm
Jet kerosene (Jet A1 or Jet A)	3,15	<input checked="" type="checkbox"/> Yes
Jet gasoline (Jet B)	3,10	<input type="checkbox"/> yes
Aviation gasoline (AvGas)	3,10	<input checked="" type="checkbox"/> Yes

(b) If applicable, please provide a description of the procedure used to determine the emission factors, net calorific values and biomass content of alternative fuels (source streams).

<u>Title of procedure</u>	n.a.
<u>Reference for procedure</u>	
<u>Brief description of procedure</u>	
<u>Post or department responsible for data maintenance</u>	
<u>Location where records are kept</u>	
<u>Name of system used (where applicable).</u>	

(c) If applicable, please describe the approaches used for sampling batches of alternative fuels.

For each source stream, succinctly describe the approach to be used for sampling fuels and materials for the determination of emission factor, net calorific value and biomass content for each fuel or material batch

Source stream (fuel type)	Parameter	Description	conform with Standard (ISO, CEN,...)	Frequency
	Please select			Please select
	Please select			Please select

(d) If applicable, please describe the approaches used to analyse alternative fuels (including biofuels) for the determination of net calorific value, emission factors and biogenic content (as relevant).

For each source stream, succinctly describe the approach to be used for analysing fuels and materials for the determination of emission factor, net calorific value and biomass content for each fuel or material batch (if applicable to the selected tier).

Source stream (fuel type)	Parameter	Description	conform with Standard (ISO, CEN,...)	Frequency
	Please select			Please select
	Please select			Please select

(e) If applicable, please provide a list of laboratories used to undertake the analysis and confirm whether the laboratory is accredited for this analysis according to ISO17025, or otherwise describe the quality assurance measures in place.

Name of laboratory	Analytical procedures	Is laboratory ISO17025 accredited for this analysis?	If no, specify quality assurance measures
		Please select	
		Please select	
		Please select	
		Please select	

<<< Click here to proceed to section 10 "Data gaps" >>>

SIMPLIFIED CALCULATION OF CO₂ EMISSIONS

9 Simplified calculation

You may apply the simplified procedure for the calculation of activity data described in Annex XIV of the MRG if you are operating either:
- fewer than 243 flights per period of three consecutive four-month periods; or
- flights with total annual emissions lower than 10,000 tonnes per year

- (a) Please specify the name and a brief description of the tool used to estimate fuel consumption.

not eligible

- (b) Please confirm that the tool named in 9(a) has been approved by the Commission

Small emitters may estimate the fuel consumption using tools implemented by Eurocontrol or another relevant organisation, which process all relevant air traffic information such as that available to Eurocontrol. The applicable tools shall only be used if they are approved by the Commission.

Yes

- (c) Please confirm that the following standard emission factors for commercial standard aviation fuels will be used to calculate emissions

Type of aviation fuel	Default IPCC value (tCO ₂ /t)	Confirm
Jet kerosene (Jet A1 or Jet A)	3,15	<input type="checkbox"/>
Jet gasoline (Jet B)	3,10	<input type="checkbox"/>
Aviation gasoline (AvGas)	3,10	<input type="checkbox"/>

- (d) If using an alternative fuel (including biofuel), please outline the proposed emission factor and net calorific value to be used and justify the methodology used.

not eligible

10 Data Gaps

If a Competent Authority, aircraft operator or verifier detects that part of the data used to determine emissions are missing as a result of circumstances beyond the control of the aircraft operator, emissions for that flight may be estimated by the operator using tools mentioned in Section 4 of Annex XIV of the Monitoring and Reporting Guidelines. The quantity of emissions for which such approach is used shall be specified in the annual emissions report.

- (a) Please specify the name and a brief description of the tool to be used to estimate fuel consumption when data is missing according to the conditions as outlined above.

If there are data gaps in our fuel consumption, we will use the tool provided by Eurocontrol, which is set to be approved by the Commission. Before the use of the tool we first try to find the source of the data gap and correct wrong data according to our provisions for monitoring wherever possible (e.g. see 7 e).

- (b) If the approach described under 10(a) above uses a tool as specified in section 4 of Annex XIV of the MRG for data gaps, please confirm that this tool has been approved by the Commission:

Yes

- (c) Please provide a short description of the methodology to treat data gaps regarding other parameters than fuel consumption, if applicable.

We will only use standard emissions factors. Therefore, the only data gaps that can arise in our calculation are from fuel consumption.

[<<< Click here to proceed to section 11 "Management Systems" >>>](#)

DESCRIPTION OF PROCEDURES FOR DATA ACQUISITION AND HANDLING ACTIVITIES, AND CONTROL ACTIVITIES

11 Management

(a) Please identify the responsibilities for monitoring and reporting (MRG Annex I Section 10.3)

Please identify the relevant job titles/posts and provide a succinct summary of their role relevant to monitoring and reporting. Only those with overall responsibility and other key roles should be listed below (i.e. do not include delegated responsibilities)

These could be outlined in a tree diagram or organisational chart attached to your submission

Job title/post	Responsibilities
Operations Management Department	completeness of emission sources and flights, data input OMS, cross-checks (fuel uplift) extract
Fleet management coordinator	maintenance of aircraft list
Controlling Department	validate emissions data, control of operational and financial risks
Fuel Management Department	Fuel invoice checking, communication with fuel suppliers
IT Department	security, backup, software-updates etc.
Aircraft maintenance	control on-board measurement systems
Pilot	on-board measurement, recording and transmission of fuel consumption, cross-checkes fuel uplift

(b) Please provide titles and references for the procedures for data acquisition and handling activities and control activities, including maintenance and calibration of measurement equipment (MRG Annex I Section 10.3).

Please refer to specific management and control procedures and documents where relevant. For example, specific quality or environmental management procedures (MRG 2007 Annex I Section 10.2)

Item	Procedure Title and Reference	Is this procedure part of a certified Management System?
The sequence and interaction of data acquisition and handling activities, including methods of calculations and measurements	See previous sections: Fleet list (incl wet lease list) update -> 4 (d) Flight recording -> 4(e) Fuel uplift / fuel on-board -> 7(c), (d), (f) ETS cross-check -> See also uploaded process flows.	No
Risk assessment of the definition and evaluations of the control system	Because risks depend on the type of data, these are discussed in previous sections. See "key risks" and "control activities" in the procedure description of sections 4 (d), (e), (f), 6 (c), and 7 (e) of this monitoring plan. See also Chapter "risk assessment" of the Management System.	No
Management of competences for the responsibilities assigned	Chapter "organisation and responsibilities" of the Management System.	No
Quality assurance of measuring equipment and information technology used	Chapters "implementation of software", "change management", "security management" of the Management System. See also "control activities" in procedure description of sections 4 (d), (e), (f), 6 (c), and 7 (e) of this monitoring plan.	No
Internal reviews of reported data	See process flow 11 (e)	No
Outsourced processes	Control of fuel supplier: chapter "fuel invoicing" of the Management System Ground handling agents: chapter "subcontractors and third-party services" of the Management System	No
Corrections and corrective action	Chapter "corrections" of the Management System	No
Records and documentation	Chapter "documentation" of the Management System	No

(c) Does your organisation have a documented quality management system? Please choose the most relevant response.

Certified quality management system in place

(d) If the Quality Management System is certified by an accredited organisation, please specify to which standard e.g. ISO 9001, etc.

We have a certified integrated process-oriented management system (ISO 9001). We checked the existing procedures (needed for monitoring) if they meet the EU-ETS requirements and if needed we made appropriate adjustments. There are also newly defined procedures for the EU ETS, where new roles/capacities and responsibilities have been defined and documented in amendments to our existing manuals (e.g. new processes: definition of the monitoring methodology for additional aircrafts under 4 c), determination of flights covered by Annex I of the Directive under 4 f) and compliance with the requirements of the selected tier und 7 d) in our operations manual). Our activities to integrate monitoring for EU-ETS in our management system include procedures on recording, transmitting, storing and retrieving data used for EU ETS purposes, as well as new internal review procedures. See also section 11(b) for reference to the relevant chapters, which have been extended to cover EU ETS processes.

Also improved/amended quality assurance procedures are documented in our management system. They include regular plausibility checks of flight data (fuel consumption per airport pair and aircraft, etc.). EU ETS procedures will also be addressed in our audit plan. The next audit is scheduled for January/February 2010 to check the quality of the new/a We have also defined new responsibilities for monitoring the accuracy of our methodology and potential for improvement. This currently takes the f

- (e) **Please attach a representation of the data flow for the calculation of annual emissions, including responsibility for retrieving and storing each type of data. If necessary, please refer to additional information, submitted with your completed plan.**

Please reference the file/document attached to your monitoring plan in the box below.

Annual_emissions_data_flow.pdf

12 List of definitions and abbreviations used

- (a) Please list any abbreviations, acronyms or definitions that you have used in completing this monitoring plan.

Abbreviation	Definition
ACARS	Aircraft Communication Addressing and Reporting System
ETS	EU Emissions Trading Scheme
MTOW	maximum take-off weight
n.a.	not applicable
OMS	Operations Management System

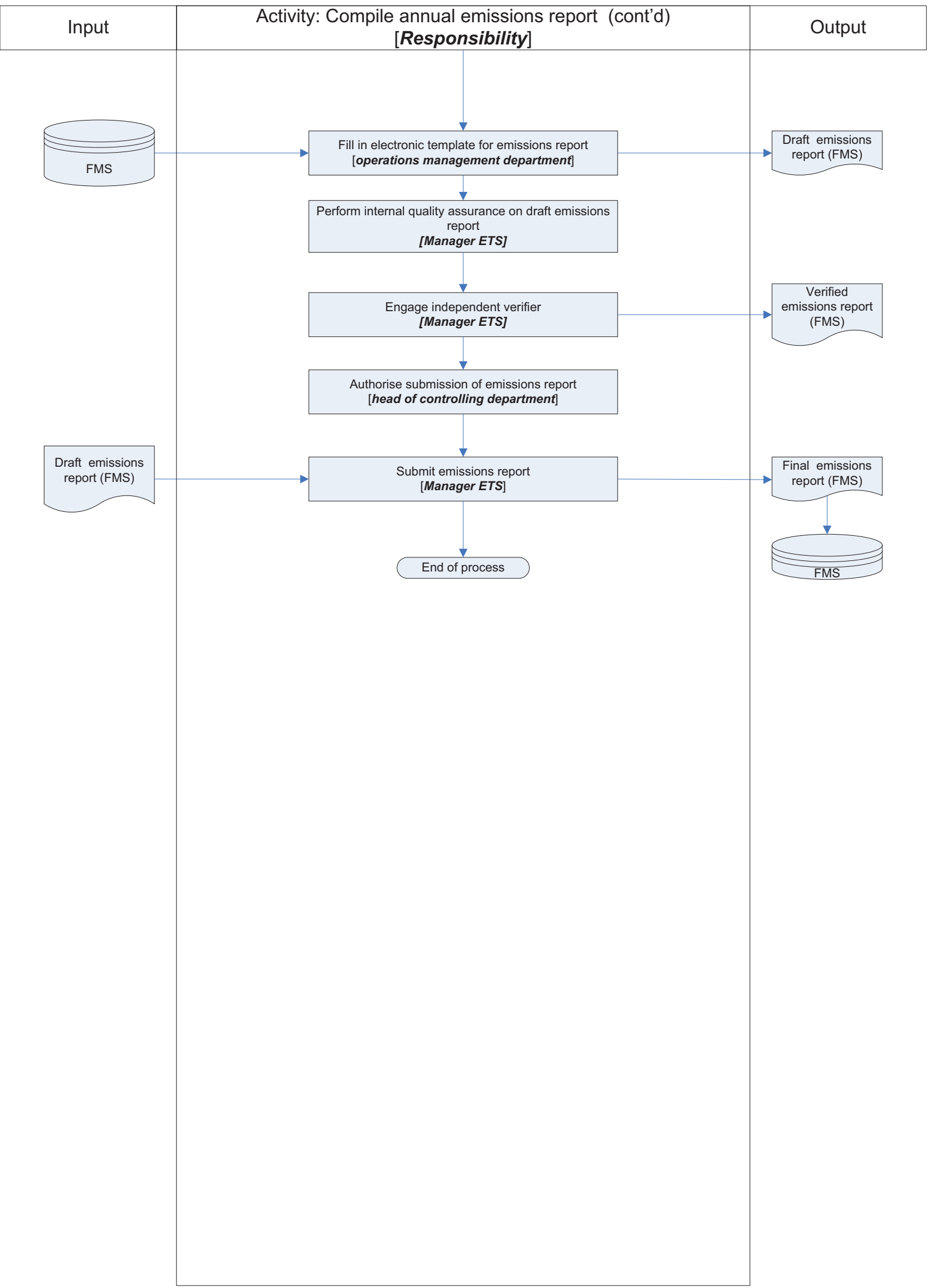
13 Additional information

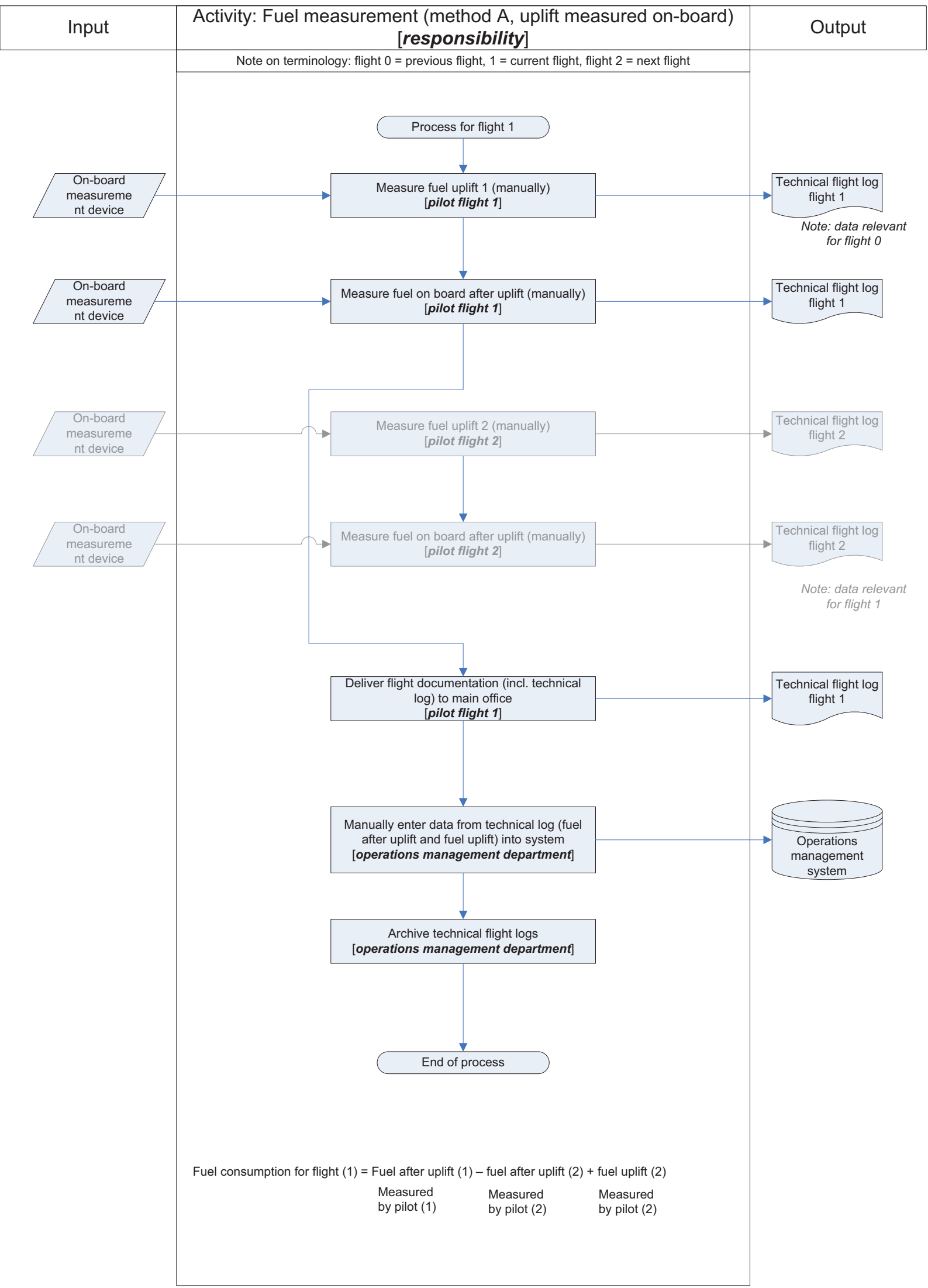
- (a) If you are providing any other information that you wish us to take into account in considering your plan, tell us here. Please provide this information in an electronic format wherever possible. You can provide information as Microsoft Word, Excel, or Adobe Acrobat formats.

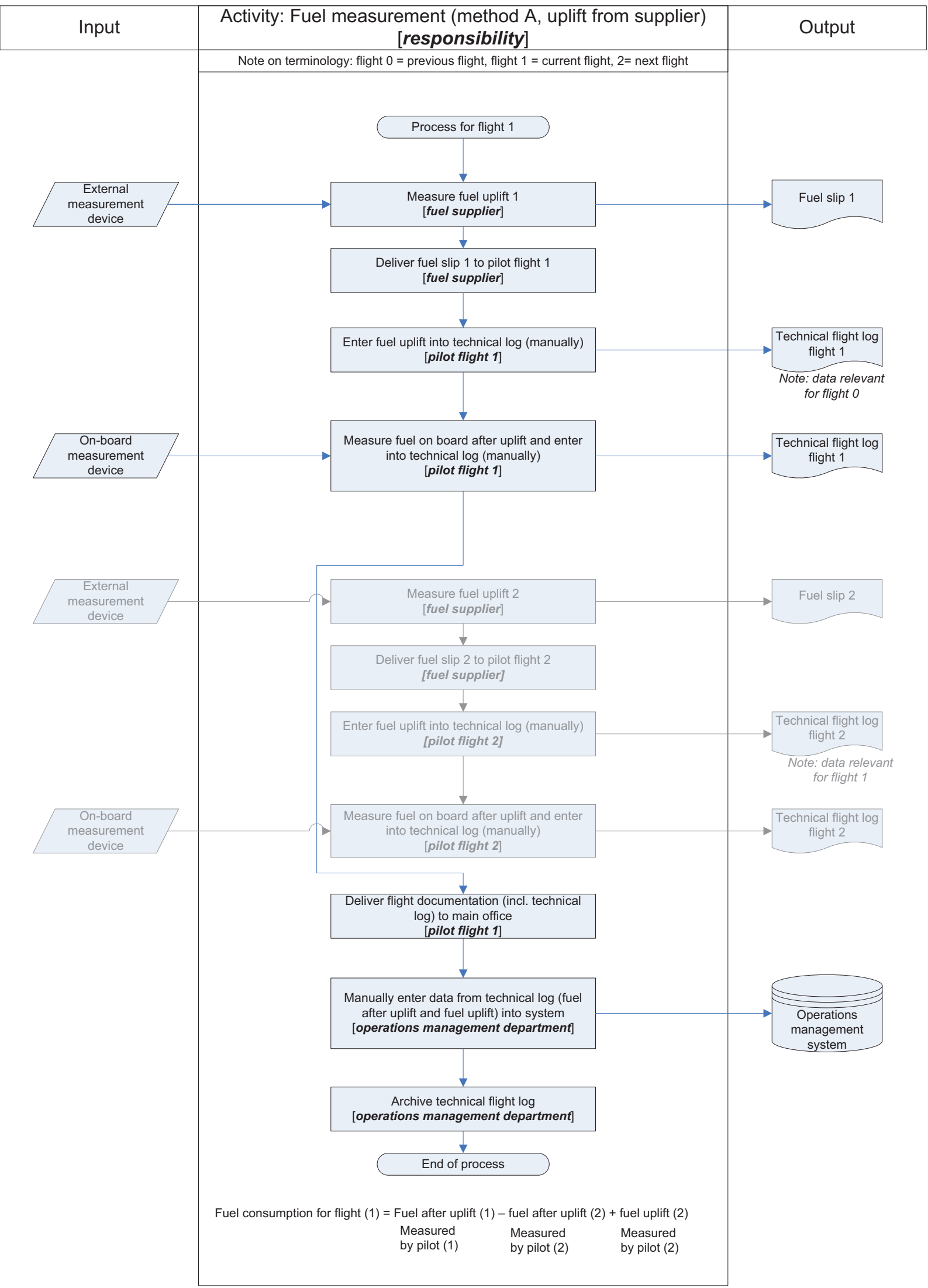
You are advised to avoid supplying non-relevant information as it can slow down the approval. Additional documentation provided should be clearly referenced, and the file name / reference number provided below. If needed, check with your competent authority if other file formats than the ones mentioned above are acceptable.

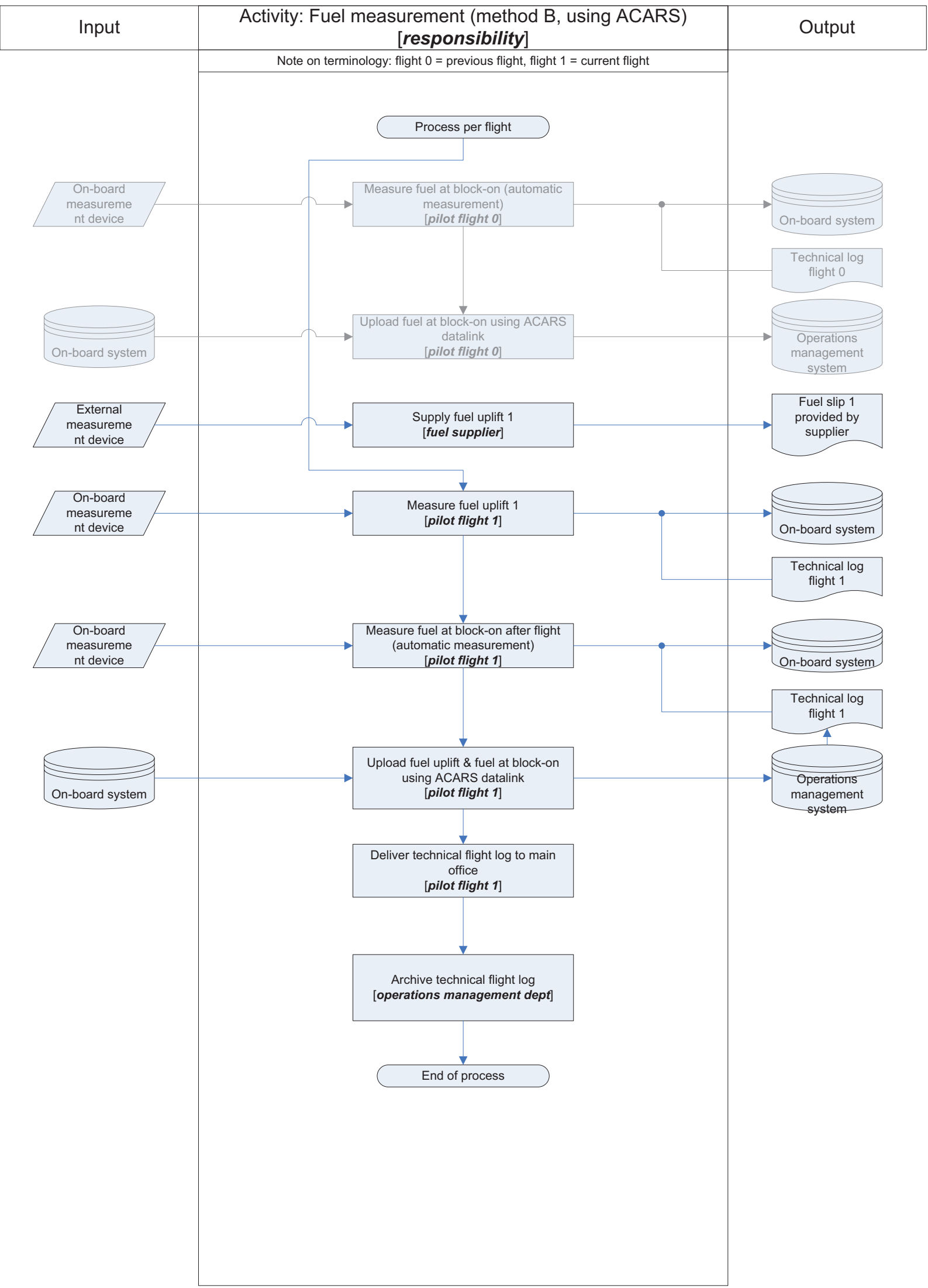
Please provide file name(s) (if in an electronic format) or document reference number(s) (if hard copy) below:

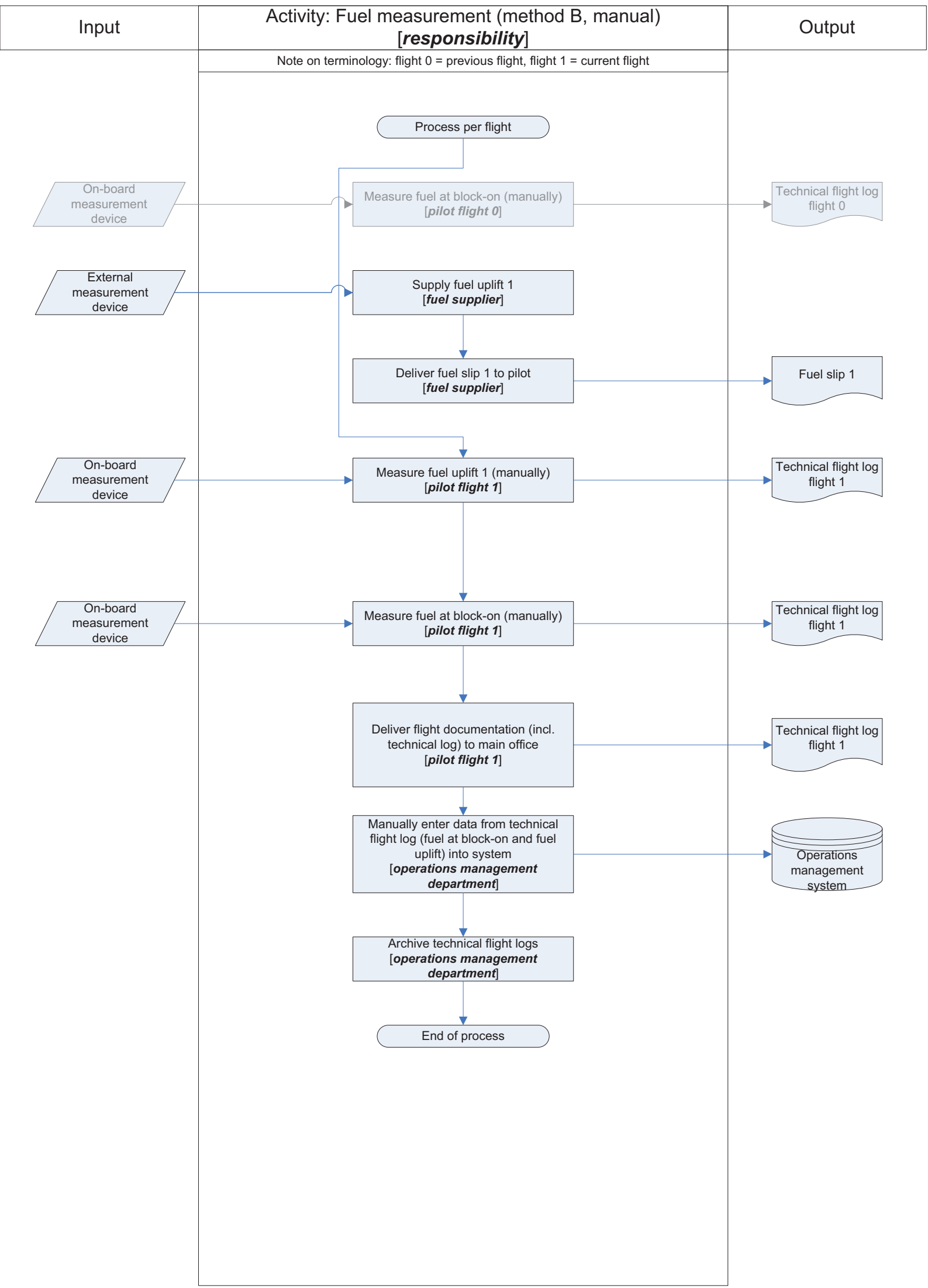
File name/Reference	Document description
fuel_method_B_ACARS.pdf	chart illustrating data flow into OMS for aircraft equipped with ACARS
fuel_method_B_manual.pdf	chart illustrating alternative data flow into OMS
systems.pdf	schematic representation of systems and interlinkages



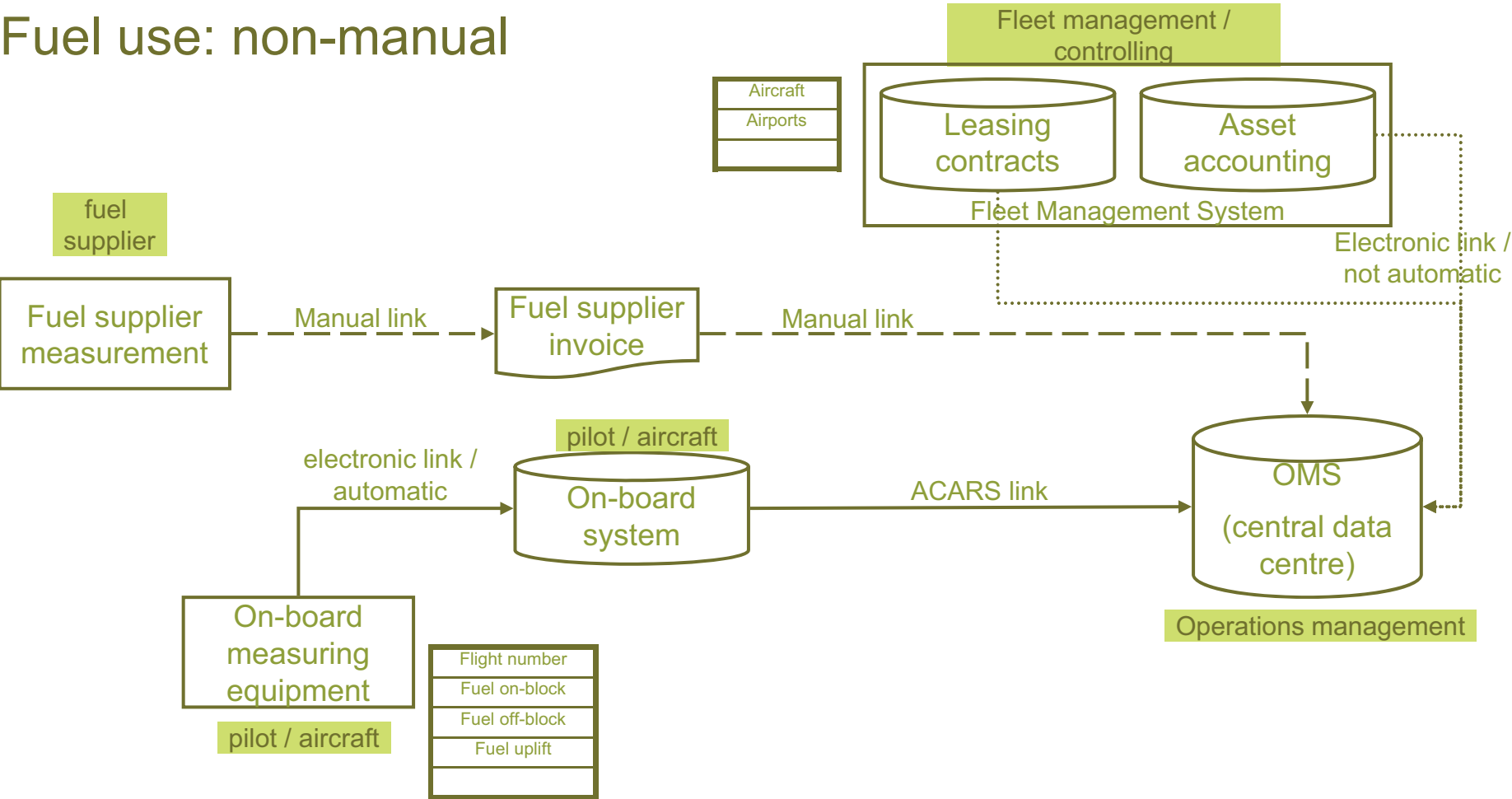




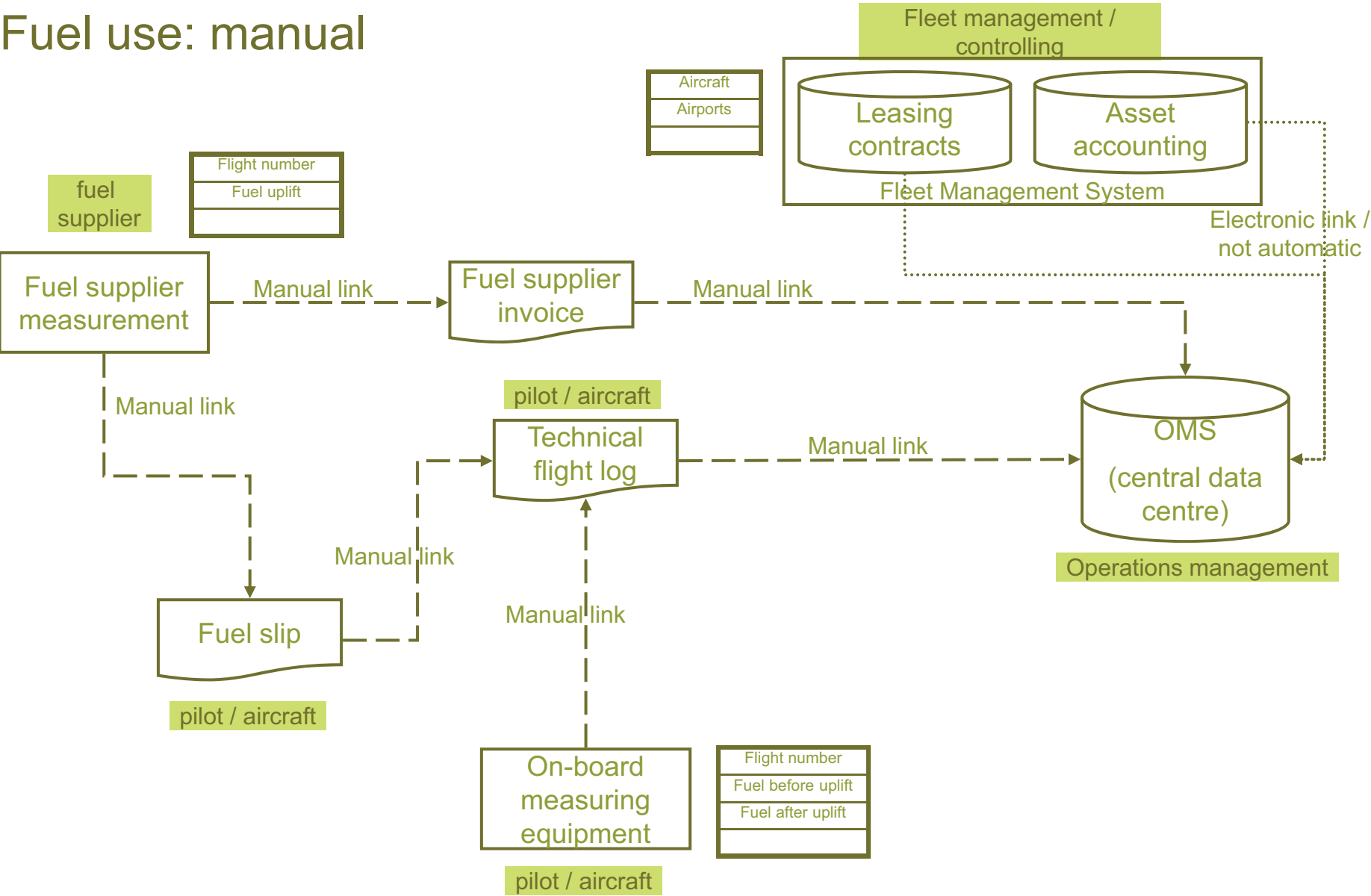




Fuel use: non-manual



Fuel use: manual



Passengers + cargo (non-manual and manual)

