Key verification risks and solutions to possible verifiability issues

John Pepper
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Main Verification risks

- Resources & Timing

- Scope issues

- Detailed Verification Issues

Resources and Timing

- Additional Verifiers will be required

- Opportunities for "hands on experience" may be limited prior to actual verification as base year and annual emissions will be subject to verification commencing 2010

- Complications of verification outside of Member states
  - Competency
  - Resources
  - (Non) Cooperation from operators

- Preparedness of operators and knowledge of EUETS specific issues e.g. uncertainty

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Scope & Boundary Issues

- **Risks can be minimised by clear monitoring plans, BUT**
  - EU ETS Phase 1 – Authorities did not always understand or do a good job in approval and relied on verifiers to identify the issues
  - Anticipated to be less confusion than with fixed sources, where there were many interpretations of combustion sources

- **Issues such as positioning flights, charters most likely to cause problems**

- **Leasing**

- **ICAO Designation**

- **May be issues with airlines that have grown by acquisition and have different control systems**

Verification Issues from UK ETS

- Previous experience in UK ETS

- Monitoring and reporting plan defined and approved by DEFRA

- Overall approach based on data extraction and calculations in Excel and other IT systems - spreadsheet errors – key issue in UK ETS

- Issues such as application emission factors and NCV can be standardised and, once established correctly - low risk areas

- Visual checking individual planes/instruments is not a practicable option nor an efficient use of time – what would be a check be designed to achieve - we know they all have a fuel gauge! (Compare with EUETS Phase 1 approach to metering)

- Already extremely tight controls on aircraft instrumentation

- Suggest additional guidance could be given on appropriate IT QA/QC controls and verification tools and techniques

Verification Issues

- ■ TONNE-KILOMETRE MONITORING

  - Option 1 for distance is straightforward to verify and would be consistent

- ■ Any risk of double counting? (Should be low risk of double counting as each aerodrome pairing is unique)

- ■ Weights

  - Verifiers would need to check that the reported data was consistent with mass and balance documentation.

  - Calibration of measurement instruments for freight mass and passenger actual mass (if used)

  - Strict controls in place for safety requirements

Discussion

- Distance
  - How many aerodrome pairs need to be checked?
  - Rank by contribution e.g. airline flew LHR to EDI 1095 times during year but INV to LGW only 365 times
  - Only need to check the GCD once for each aerodrome pair!
  - But with standard tables easy to (if tedious) to check 100% of distances
- Tonnes
  - Sense check can always be made against default value of 100kg for each passenger and their checked baggage.
  - Weight of payload MUST be known for safety requirements
  - Therefore verification focus is based on questions such as:
    - "Demonstrate to me that all data is within the database and is being correctly extracted (e.g, by aerodrome pair)
  - Instrumentation
    - Could ask for a sample of calibrations but passengers are NOT weighed so does going further than default values add value?

Fuel Consumption

- Systems for tracking data will vary widely in the scheme
- Some operators may propose (or develop) *more than one systems* (e.g. an airline that has recently acquired another airline with incompatible IT systems
- Cross checks fuel consumption unlikely to match invoiced data as in many cases not all flights would be in/out of EU
- Calibration Certificates for individual aircraft – paper systems may be difficult to retrieve? (May be in different country) Are they needed? (cross check against meters delivery on fuel supply tanker?)

Fuel Consumption

- Need verification checks on *completeness of data*
- Can check against published sources such as timetables
- Issues such as flight diversions, whilst relevant, are unlikely to be material
- If operator cannot comply with preferred methodology then much higher uncertainty (which should be approved in M&R plan), and verification may be impacted.
- Is data checked by operator for errors (e.g. fuel uplift > fuel payload) e.g. through database reports and manual correction) If not, verifier will need to review implications
- There may be complicated situations e.g. commercial (qualifying) flight, followed by training flight (non qualifying), followed by commercial flight – does operator M&R plan cover these situations?

Fuel

- **NCV and Fuel**
  - Fuels - supplied to international and national standards which define net calorific values and acceptable test methods – LOW VERIFICATION RISK
  - Commercially trade fuel in xx% of cases (99%+???)
  - Are there any exceptions? Future Biofuels?
  - Pilot measures in MASS, so this needs to be considered in defining appropriate factors (IPCC factors are in tonneCO2/TJ)

Verification Sampling – some thoughts

■ Large quantity of data, verification process will be focused on data acquisition, data flow and QA/QC processes from operator for "cleansing" of data

■ Population size does not normally affect sample size - the larger the population size the lower the proportion of that population that needs to be sampled to be representative

■ Any sample larger than minimum size (if chosen properly) should yield results no less precise, but not necessarily more precise, than the minimum sample.

■ This means that, although we may choose to use a larger sample for other reasons, there is no *statistical* basis for thinking that it will provide better results

■ Key question is "What is an "acceptable error rate" in the data population (expected to be very small, especially if automated and data cleansed systems)