

## First-timer Guide for preparing bunker tanker and mass flow meter (MUT) for meter verification using Coriolis master mass flowmeter

This guide serves as the reference document to assist the bunker tanker operators in Singapore in preparing their bunker tankers & MFM systems for meter verification tests for the **FIRST TIME**. Prepared by Metcore International Pte Ltd for ease of performing verification of bunker mass flowmeters (MFM) using the Coriolis master mass flowmeter (direct mass measurement) methodology.

This provides the guidance for preparation work prior to the verification of bunker MFM and its system.

Specific guidelines are explained as follow:

### Meter Verification Request

- Client will submit "Information of meter under test (MUT) checklist".
- Checklist can be obtained through: <https://forms.gle/vqJjVCRHzogghfMt7>
- Key information about the bunker tanker & MUT will be required to be filled
- Site visit together with bunker tanker & Metcore's representative **shall** be arranged for tankers that are carrying out this verification process with a master meter for the **first time**.
- This should be arranged as early as possible to allow sufficient time for the bunker tanker to prepare the required set up for the verification process.
- Addition information may be requested after the site visit prior to verification date.

### Site Inspection

- Metcore to brief bunker tanker representative on the preparation needed for the verification process. This includes: -
  - **MUT Communication Protocol**
  - Ensure the MUT communication protocol (i.e. transmission of signal) is aligned to the master MFM
  - NOTE\* Some meter models may require the W&M seal to be broken for the necessary alignment of the communication protocol. This shall be carry out with the present of the Authoritised Verifier. Meter vendor may need to be present depending on client's contractual obligation.
  - Strictly advised to proceed the above in accordance to the breaking of seal & re-sealing protocol.
  - **Proving Loop Line-up**
  - Establish the whole proving loop from the pump-MUT-delivery line-MM-return line for the verification process.
  - The point of return to the bunker tanks must be segregated from the delivery flow.
  - Establish the flanges/hoses sizes to be used for both the delivery and return process
  - Method to ensure stable flow condition is also established during this site visit.
  - **Others**
  - Other key areas like power supply will also be aligned during the site inspection.

### Post-site Inspection

- A test plan will be prepared by the bunker tanker representative and agreed by Metcore's representative.
- Any other services, like pipeline securities re-sealing, re-stamping, zero verification for MUT can be included together for commercial agreement.