

**Speed Post**

I-12/17/2023-W&M  
Government of India  
Ministry of Consumer Affairs, Food and Public Distribution  
Department of Consumer Affairs  
Weights and Measures Unit

Krishi Bhawan, New Delhi-110001

Dated: 10.10.2023

To,

1. The Chairman cum Managing Director  
BPCL/ HPCL/ IOCL
2. Controller of Legal Metrology, Government of Tamil Nadu

**Subject:** Payment of verification/ stamping fees directly from OMCs to Legal Metrology Department-reg.

Sir,

Kindly refer the 'Round Table Workshop' on 'Measurement of Petroleum Products' and related issues held at Vigyan Bhawan, New Delhi on 09.06.2023 under the Chairmanship of Shri Rohit Kumar Singh, Secretary, Department of Consumer Affairs to improve transparency and simplify the business operations within the realm of Legal Metrology.

2. During the meeting, the issue of calibration of depot towers was raised and it was decided that an SoP will be prepared by the Petroleum Dealers Association. A copy of the SoP submitted by Petroleum Dealers Association is enclosed herewith for needful.

3. It was also clarified by Petroleum Dealers Associations that the OMC's are the owners of Outfits and Equipment installed at Retail Outlets. It was requested that the existing procedure of 'Payment and Reimbursement' of Stamping fees may be discontinued due to delay in reimbursement of such fees. The Associations informed that the amount of stamping fees is considerably huge and the Dealers have to struggle to pay the same at the last minute. At the same time the Legal Metrology officers are also put to inconvenience while planning their visits to carry out the verification.

4. In the meeting it was requested that the OMC's may directly deposit the 'Stamping Fees' in advance for each of the quarter to Legal Metrology Department so that the Legal Metrology Department can plan their schedule of visits to Retail Outlets. It would also prove to be a time saving methodology for Legal Metrology Department.

5. It was suggested to initiate the said system as a 'Pilot Project' in the State of Tamil Nadu, as the database of the new online system has already been installed in Tamil Nadu and is functioning well. In this prevailing database formulated by LM Department of Tamil Nadu, no major modification is required, which may be done by the Government of Tamil Nadu. However, the updating of database in other State

may also be initiated and on its success in Tamil Nadu, the same may be implemented in other States.

6. Therefore, it is requested that the OMCs may initiate the process of depositing the verification fee online in the State of Tamil Nadu as a Pilot Project.

Yours faithfully,



(Ashutosh Agarwal)

I/c Director, Legal Metrology

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- Copy to:**
1. Director of Marketing - BPCL, IOCL, BPCL
  2. Executive Director Retail - BPCL, IOCL, HPCL
  3. Controllers of Legal Metrology, all States/UTs

**Standard Operating Procedure to be followed by all terminals of Oil Marketing Companies for Calibration of Metal Volumetric Standard Vessels (Prover Vessels) to be used to calibrate the vessels of Tank Trucks that are used to transport Liquid Hydrocarbons.**

**Introduction:**

A need was felt by the Dealers of Oil Marketing Companies, the Oil Industry and the Legal Metrology Department, Ministry of Consumer Affairs, Government of India, to standardise the procedure for calibration of Metal Volumetric Standard Vessels (Prover Vessels as they are called by the industry) that are in use at the supply terminals of the Oil Marketing Companies, and the terminology, as it was found that there was no standard procedure for the same, leading to multiple methods being followed, with non standard terminologies being used. Standardising this procedure is essential from the view of the regulator, Department of Legal Metrology, in order to enable it's officers to carry out the activity to the satisfaction of all stakeholders and to minimise discretion of any particular individual. The preparation of this SOP is one step of an ongoing set of efforts to bring about standardisation, transparency and accountability in the transfer of oil products across the chain of custody, from the manufacturer (Oil Marketing Companies) to the end consumer. It is essential that the procedure mentioned in this document is adhered to strictly, in order to ensure that the right quantity of fuel is dispensed to the end consumers of the country. Though equipment specification for the Metal Volumetric Standards (Prover Vessels) are not present in this document, this SOP has been prepared to standardise the calibration activity of the existing vessels, which are more or less, similar across all the terminals.

**Materials required for calibration of Metal Volumetric Standard Vessels (Prover Vessels)**

*\$(See reference)*

- A. Calibrated 20 Litre Inspection Measure
- B. Observation record sheets to record the time of each iteration of filling in and draining of water
- C. Glass type level gauges – 2 Nos for simultaneous measurement of horizontal and vertical axis of prover vessel\*
- D. A calibrated TDS meter to read the hardness of water
- E. Soft water where in the Total Dissolved Solids (TDS) in the water is less than 200, free of contaminants

The following is the Standard Operating Procedure to be adopted

**1. Prior Intimation to stake holders:**

The management of the terminal, where the calibration for the prover vessels is due, should intimate the respective State Industry Petroleum Dealers' Association and District Petroleum Dealers' Association atleast 10 days before the scheduled date of prover vessel calibration, in writing, by email / registered post to their registered addresses.

**2. Preparation of 20 Litre Inspection Measure:**

The Conical 20 Litre Inspection Measure (Metal Can), to be used for the calibration of the prover vessels, under the water withdrawal method, should first be verified for accuracy, using the 10 Litre Working Standard Vessel of the concerned Legal Metrology office under whose jurisdiction this calibration exercise is to be undertaken, in the presence of the officials of the Terminal Management and representatives of the Dealer Associations. After such verification, the 20 Litre Inspection measure should be stamped and stored in a sealed box under the signatures of the officials of the Department of Legal Metrology, officials of the Terminal Management and representatives of the Dealer Associations. This 20 Litre inspection measure should be presented before all the stake holders, with seals intact, at the time of prover vessels calibration.

**3. Inspection of Prover Vessel and removal of seals # (See Reference)**

The calibration of each prover vessel starts with the inspection of the vessel and the seals affixed to it during the previous calibration exercise. The following pertinent features of the Vessel must be visually inspected at the start of the Calibration process:

Exterior

- a. All surfaces affecting volume must be dent-free
- b. The prover vessel must be equipped with a suitable, operating drain valve that is leak-free
- c. Two spirit levels, that are shielded, fixed at right angles must be available on the upper conical part of the prover vessel to ensure proper levelling

- i. The prover vessel itself should be fixed on a stand, with adjustable legs to allow for corrections in position in order to ensure accurate horizontal and vertical levelling
- d. Surface finish, must be clean and free of grease, oil etc... The surface must be corrosion free
- e. The vessel should bear, in a conspicuous place, a plate that bears the following details
  - i. Name / Trademark / Logo of the manufacturer
  - ii. The nominal volume of the vessel in Litres
  - iii. Serial number / Identification number of the vessel
  - iv. The material with which the vessel is constructed shall be identified ( Carbon Steel / Stainless steel (Magnetic / Non Magnetic)

#### Interior

- a. Joints and seams must be smooth and uniform
- b. Surfaces, including joints and seams must be clean and free of grease, dirt or oil film
- c. Surface must be free of rust corrosion
- d. Potential air / water traps, either by design or damage is not permissible. If this defect is identified at a later stage, the entire calibration exercise will be declared void

It should also be ensured that all the removable, changeable and adjustable points in the prover vessel have been sealed during the previous calibration exercise and that they are intact. In order to ensure accuracy and to overcome the problem in reading the meniscus of water in the scale of the vessel, it should be confirmed that a permanent overflow pipe, with an adjuster, should have been provided at the level where the water is expected to reach the rated capacity.

Once all the stakeholders present have carried out a thorough inspection of the prover vessel and are satisfied that, all seals affixed during the previous calibration, have been found to be intact, the calibration process can proceed, by removing the seals.

#### 4. Leak Test of Prover Vessels

Once the seals are removed, water should be filled in the prover vessel. All stake holders present should inspect all joints, seams, pipe fittings, gauges and the overall vessel for any leak. The drain valve should be checked for leaks. This can be done by opening and closing the drain valve several times to verify the positive sealing of the valve.

The vessel should also be checked for air entrapment. This can be verified by following the below procedure.\* (*See Reference*)

- a. Take and record a level reading.
- b. Open the drain valve to draw about 5 Litres of water in a wetted measure
- c. Return the water to the prover vessel
- d. If the level is lower than the recorded level reading, then there was air pocket in the vessel and it has now been filled with water.

Once all stake holders are satisfied and their concurrence is obtained, the water from the prover vessel should be drained completely. During the draining the effectiveness of the anti-swirl plate fixed at the bottom of the vessel should be observed.

#### 5. Measured filling of Prover Vessels

The next step in this process would be the measured filling of the Prover vessel. The Conical 20 Litre Inspection Measure, that has already been prepared for this calibration exercise, should be presented before all the stakeholders present and it should be ensured that all the seals that we were affixed to it and it's container box are intact. On obtaining the concurrence of all the stake holders present, the seal(s) of the container box can be opened and the 20 Litre Conical Inspection Measure can be taken out for usage. Once the water in the prover vessel, filled in for the leak test, is drained completely, the prover vessel should be filled with water, up to the level of it's rated capacity, using the Conical 20 Litre Inspection Measure. The inside surface of the Inspection Measure should wiped clean with a wet cloth, before and after each iteration of filling it with water upto the level of it's rated

capacity and emptying the same entirely, into the prover vessel. This iteration should be repeated, until the prover vessel is filled upto the level of it's rated capacity. The time of completion of each iteration should be noted down. In order to ensure that the capacity of the prover vessel has been reached, the adjuster screw should be adjusted in a way that a drop of water comes out of the drain pipe.

#### **6. Measured Withdrawal of water from Prover Vessel**

Once the filling of the prover vessel is completed, the water so filled, during the above process, should again be drained in a measured manner, by draining the water into the same Conical Inspection Measure. The number of iterations carried out for both, filling in the prover vessel and draining of the prover vessel using the 20 Litre Conical Inspection Measure, should be equal. In case any variation is found, necessary adjustments should be made to the prover vessel using the adjusters and the excess / short quantity should be adjusted accordingly.

#### **7. Sealing of Prover Vessel**

Once the measured withdrawal of water from the prover vessel is completed to the satisfaction of all stake holders, all adjusters, openings and movable parts should be sealed by the officials of the Legal Metrology Department, in the presence of the Oil Marketing Company Terminal Management / Management Representatives, representatives of the state and district petroleum dealers' associations and representative dealers who are customers of the said supply location / terminal.

#### **8. Documentation of the Calibration process**

The entire process of the calibration of the prover vessel should be documented by written minutes. The minutes should also record the names of each individual stake holder present. The minutes should be signed by all the representatives of the stake holders, viz, Oil Marketing Companies, Dealer representative of State and District Dealers' Associations and delaers representatives who are customers of the supply location / terminal.

## 9. Adherence to Safety Norms

All participants of the prover vessel calibration process should adhere to the established safety norms diligently. Wearing of Personal Protective Equipments (PPE) and following the established protocols in case of any emergency at the time of carrying out the calibration activity should be strictly adhered to.

### References:

**All references in this document pertain to the below report**

*Evaluation of Metal Volumetric Standards Used in the Measurement of Liquid Hydrocarbons: A Report of a U. S. National Bureau of Standards and American Petroleum Institute Research Associate Project.*

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\* Page No 71, Subdivision 5

# Page No 69, Subdivision III.