



Petroleum and Petrochemical Bulletin

VESSEL EXPERIENCE FACTORS

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The purpose of this bulletin is to clarify the position of IFIA member companies regarding the use and application of VEFs (Vessel Experience Factors).

IFIA member companies are frequently asked to apply VEFs to vessel figures for the purpose of Custody Transfer where measurements determined by shore tank or meter are not available.

Following the first issue of this bulletin in March 2002 the new standard, API MPMS Chapter 17.9/EI HM 49 *Vessel Experience Factor (VEF)* was issued in November 2005, "the Standard". Appendix C in API MPMS Chapter 17.1 was withdrawn in March 2008.

The VEF is primarily a loss control tool to help assess the validity of quantities derived from shore side (tanks, meters, etc.), off-shore installations or from other vessels. It should be recognized that quantities derived using vessel figures and the VEF will never have the measurement rigor of those from traditional static shore tank or meter measurements. For these reasons the Standard states that VEF adjusted vessel figures may be used for custody transfer where traditional measurements are either "not available, or are known to be inadequate". Although not well defined, "known to be inadequate" implies a general acceptance by all parties that due to poor design or obvious malfunction a shore tank or meter measurement cannot be relied upon.

While in many situations when traditional measurements are questioned, a VEF adjusted vessel quantity may be the only available alternate measurement, the lack of statistics for precision and uncertainty cannot be overcome. Therefore, in these situations, it should not be automatically assumed that VEF adjusted vessel figures will provide any greater accuracy than the traditional measurements which they might replace.

Limitations of the Vessel Experience Factor

There are a number of factors which limit the overall accuracy of quantity calculations based on application of a VEF to vessel measurements. These factors are recognized in the Standard but a number of issues remain:

- The voyage data used to compile a VEF must, by necessity, come from information supplied by the vessel. The inspector is rarely able to verify the accuracy of this data.
- Most vessels only maintain records of load port data. Therefore, most vessel experience factors are load port experience factors (VEFL), even though they are frequently applied to discharge measurements. The Standard requires that data necessary for calculation of both load and discharge VEFs should be maintained by vessels. As vessels are commonly not aware of the shore outturn this data is not normally available. Data and information may be available from other reliable sources but not necessarily in sequential order.
- Barge towing companies often do not maintain load or discharge records. Data may be available from other reliable sources, and which would include inspection companies and/or oil companies, but, again, not necessarily in sequential order.

Revisions/Reaffirmations

Rev. 0 March 2002
Rev. 1 March 2009

- There is considerable debate about whether VEFs calculated from “full” cargoes should be applied to part cargoes. The Standard allows for development of partial VEFs for “a specific set of compartments, or amount less than 75% of a vessel capacity”. However, this requires regular operation of the vessel in the same condition and it is extremely rare for there to be sufficient data to compile a partial VEF. The Standard states “if data to determine a partial cargo VEF is not available it is recommended to apply the full cargo VEF to each partial cargo”. Although the recommendation is clear the application of VEFs to part cargoes remains a contentious issue.

As a consequence of the known limitations, the use of vessels figures adjusted by VEF to determine a Custody Transfer quantity (Bill of Lading or Outturn) is a commercial decision and can only be made with the agreement of the interested parties. This is clearly noted in the Standard. However it should be recognized that some regulatory authorities impose the use of a “correction” factor to vessel measurements that is not in keeping with the Standard and outside the control of inspection companies and their principals.

Application of the Vessel Experience Factor

Noting the above, it is recommended that IFIA member companies should calculate Custody Transfer figures by applying a VEF to vessel measurements as follows:

- In accordance with the Standard, vessel experience factors will be applied for purposes of determining Custody Transfer quantities only “when agreed by interested parties”.
- A full-vessel VEF will only be used for partial cargoes, as recommended in the Standard, where i) a partial VEF is not available or ii) the interested parties instruct that a full-vessel VEF is to be applied.
- When data to determine a discharge VEF (VEFD) in accordance with the Standard is not available the Standard states that “a VEFL may be used”. However, in these circumstances, IFIA member companies may, with agreement of all interested parties, use data from other reliable sources to calculate a discharge VEF. Such data may not be sequential.
- Where no agreement is obtained from interested parties with regard to application of a VEF for purposes of determining a Custody Transfer quantity, IFIA member companies should issue vessel figures with no factor applied.

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