



Exceeding Expectations

The what, when, why, how & limitations of Vessel Experience Factors

WHAT is a VEF...it is an abbreviation for Vessel Experience Factor as defined in the API Manual of Petroleum Measurement Standards Chapter 17.9. A VEF is a ratio of a ship-to-shore quantities originally conceived as a loss control tool. VEFs are calculated for both Load (LVEF) and Discharge (DVEF). When agreed to by interested parties, VEFs may also be used to determine custody transfer quantities when shore-based measurements are not available or are known to be inadequate for custody transfer.

WHEN not to apply a VEF.... Chapter 17.9 describes some circumstances when a VEF is invalid such as the maiden voyage and after structural changes have been made to ships tanks and if a ship is de-sludged during dry dock.

Care has to be taken when applying the VEF to a partial cargo. The standard considers any cargo over 75% of ship's capacity to be a full cargo. In some instances partial VEFs are available, mainly on chemical carriers. When there isn't a partial VEF available, the full VEF can be applied.

It is recognized that quantities derived using vessel figures and the VEF do not have the measurement rigor of those from traditional static shore tank or meter measurements. However with the advent of ships with double hull construction, ship tank calibration is now better than it used to be when allowance for deadwood in the tanks and hull curvature was taken into consideration. With the oncoming of double hull ships, VEFs are much closer to 1.0000 than before.

WHY apply a VEF... A VEF should be calculated for each voyage and used for its original concept as a loss control tool to note if the ship- to-shore numbers make sense and be included in the Voyage Analysis Report (VAR).

In the event that the shore numbers cannot be relied upon and provided it is agreed to by the commercial parties involved, then the vessel loaded or delivered quantities adjusted by the valid VEF can be used to determine the Bill of Lading or the Outturn.

This could be for several reasons:

1. Active shore tanks.
2. Non-functioning meters.
3. Inadvertent product movements.
4. Contractual measurement clauses ashore not met.

If you would like to be removed from our distribution list or you require information on a certain subject, please let us know via return email.
Also, please be advised individual / group AmSpec laboratory / operational tours can be arranged upon request.

HOW... a VEF is applied and determined

For each voyage, a ship to shore ratio is calculated by the attending inspector. The voyage ratios are then totaled and a mean VEF is calculated. If any of the voyages are + or – 0.3% from this mean ratio they are disqualified. After eliminating the disqualified voyages a valid VEF is determined.

Certain voyages, including ship to ship transfers and those considered to contain Gross Errors will be excluded from the mean calculation. Gross Error in this case is +/- 2%.

As far as the total number of voyages required; more are better from as many different locations as possible. Twenty (20) voyages are generally used on a Sequential Voyage Log. A minimum of five qualified voyages is required.

The VEF is applied by dividing the ship's figures by the ratio (VEF) which is a number either greater or less than 1.0000 to 4 decimal places. If it exceeds 1.0000 then the ship figure is over the shore. If it is less than 1.0000 then the ship figure is under the shore.

As always, the measurements used to derive the quantities are paramount and rely on gauging in accordance with the measurement standards using properly calibrated equipment.

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 usually is supplied by the ship. Inspectors attempt to verify the data from voyage data but it isn't always possible.
- Most ships only maintain records of load port data because discharge quantities are seldom reported back to the ship. Therefore, in order to calculate discharge VEFs, heavy reliance on individual inspection company records and from oil companies is applied. The standard recognizes that the data can be collated from several sources even though it may not be sequential. The data has to be verified with inspection reports.
- 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.

The above TechTalk information was a compilation from the following sources:

- International Federation of Inspection Agencies Bulletin 02-10 REV 1
- API Manual of Petroleum Measurement Standards, Chapter 17.9 -Vessel Experience Factor," American Petroleum Institute, Washington, D.C.
- Institute of Petroleum, Petroleum Measurement Manual, Part XVI, Procedures for Oil Cargo Measurements by Cargo Surveyors, Appendix C, Procedures for calculating Vessel Experience Factors, Institute of Petroleum, London.

If you would like to be removed from our distribution list or you require information on a certain subject, please let us know via return email.
Also, please be advised individual / group AmSpec laboratory / operational tours can be arranged upon request.

Please visit us on our website...www.amspecilc.com or contact us at (800) 286-2208