Petroleum and Petrochemical Bulletin

SAMPLING UNDER RESTRICTED OR CLOSED CONDITIONS (STATIC SAMPLING)  Bulletin 08-01 Rev. 2

International standards recommend that a number of samples are required to prepare a “representative” sample suitable for the determination of quality. These standards recommend flow proportional In-line sampling equipment (dynamic sampling) as the preferred method for obtaining samples. However, such equipment is not widely available and most samples are drawn manually from vessels and shore tanks (static samples).

Environmental and safety regulations generally require vessels to operate under restricted or closed conditions with samples drawn through vapour lock systems. These requirements are increasingly common for US inland barges as well as ocean going vessels. The specialised sampling equipment involved can restrict the types of sample that may be drawn and may not allow samples to be drawn in accordance with current manual sampling standards.

Sampling of cargoes on board tank vessels (barges and ships) working under restricted or closed conditions is addressed by API MPMS Ch 17.11/ EI HM52. Equipment for sampling under restricted or closed conditions can be effective but is subject to operational constraints.

The problems experienced by our members in working with this equipment impact on operations, particularly where the cargo is non-homogeneous. Some of the more commonly experienced problems are:

1. Significant additional time is required for sampling, particularly for vessels with multiple tanks, to allow repeated fitting, operation and removal of the equipment.

2. The diameter of most vapour lock systems is restricted to 50mm (2”) and may limit the volume of sample which can be drawn in a single operation.

3. The design of most sample containers is such that the level of the sample inside the container cannot be determined. This limits the ability to draw “All Level” or “Running” samples in accordance with the standards.

4. The design of the equipment often allows only zone or spot sampling. Additionally, most systems are limited to one sample container which must be used repeatedly, leading to potential contamination during the sampling process.

5. The cleanliness of the vapour lock system is usually unknown and it cannot be cleaned while in use. This can result in contamination of the sample (eg FAME in aviation fuel, chlorides in methanol).

6. The absence of an international standard regarding the type of vapour lock fitting has resulted in many different types and sizes in operation on vessels, sometimes preventing the use of the inspection company’s own equipment. Where vessel equipment has to be used it may not be clean or in a serviceable condition.

Revisions/Reaffirmations
Rev. 0  September 2008
Rev. 1  September 2015
Rev. 2  November 2017
These problems and their consequences may be reduced where principals, inspection companies and other interested parties are aware of any restrictions in advance, and have the opportunity to react accordingly. Therefore:

a) Members should notify their principals as soon as possible if the available sampling equipment is considered unable to draw samples that comply with published standards or principal’s requirements. Alternative procedures or methods may then be agreed. Some analysis methods (for example vapour pressure) require specific sampling procedures and where these cannot be applied principals should be advised.

b) Where the nature of the cargo and/or the configuration of the closed or restricted systems onboard are such as to materially affect the ability to draw samples in accordance with published standards or principal’s requirements, principals should, following appropriate safety assessments, consider seeking permission to perform sampling using open and unrestricted methods. This may involve moving the vessel out of any “restricted” area or port.

c) Where clean products or chemicals are to be loaded into barges and tank vessels, special attention should be given to the cleaning of tank vessel/barge standpipes and fittings. This to ensure the removal of residues, which may subsequently become entrained in samples as particulates or contaminants, leading to unnecessary quality failures.

Where cargoes are known, or are suspected to be, non-homogeneous, drawing of additional samples to determine any variation in quality is recommended. All associated analysis results should be reviewed and considered, particularly when the analysis results are to be used for custody transfer purposes.

Where members consider that the use, or condition, of restricted or closed sampling systems may have prevented the drawing of samples that can subsequently be relied upon to prepare a representative sample of the cargo, they reserve the right to inform their principals and to add appropriate statements and disclaimers to reports and certificates.

Note: Attention is also drawn to IFIA Bulletin 99-2 Sampling and Testing of Cargoes Blended on Board Marine Vessels.