

Liquid bulk cargo sampling – collecting evidence

Introduction and background

Disputes relating to “off-spec” or contaminated liquid cargoes are a recurring problem and Gard is often involved in cases where the shipowner has no independent evidence as to the cause of an alleged cargo contamination. The source of the problem could be in the shore tank at the load port, in the shore pipeline during loading or on board the vessel itself. The cargo could even have been manufactured out of specification prior to delivery to the terminal for shipment. But if the cargo is found to be “off-spec” when the vessel arrives at the discharge port and there is no evidence of contamination from the load port, the vessel could be faced with a potentially large claim, even if the vessel is not at fault.



Samples showing that the condition of the cargo has not changed between loading and discharge provide the best defence against any cargo claims. The purpose of this circular is to draw shipowners' attention to the importance of implementing procedures for taking, and retaining on board, own (duplicate) samples from all cargoes loaded on the vessel. It is also important to involve competent crew in the sampling process. An experienced officer may be able to identify a poor quality sample by visual inspection alone, and early intervention may prevent an expensive problem arising later.

Gard's experience

Although substantial resources are used on board the vessel in the preparation and cleaning of tanks and lines prior to loading, samples are all too often not taken by the vessel at the start of loading, or if they are, they are not taken properly or are discarded before they can be analysed. In one recent case handled by Gard, a chemical carrier arrived at the terminal with its cargo tanks and lines cleaned and prepared for loading. The vessel was inspected upon arrival and found to be suitable for the contracted cargo. The loading hose was connected and loading commenced but no manifold samples were taken at the start of loading. A short time into the loading operation, the crew realized that they had not followed company procedures and immediately took a first-foot tank sample of the cargo. Upon analysis of the sample the cargo was found to be off-spec and the loading was stopped. The vessel was held responsible for contaminating the cargo. The cargo already received by the vessel was pumped back to the terminal and the vessel instructed to leave the terminal in order to clean her cargo tanks and lines. Valuable time was lost and a cargo claim was lodged against the vessel.

In this particular case, the vessel returned to the terminal following cleaning operations and loading was resumed. A manifold sample was taken and analysed and everything found to be in order. When the first-foot sample with the contaminated cargo had been analysed further, it became clear that the cause of the contamination was most probably deposits or remains from previous content of the shore tanks and lines. Fortunately, in this case the contamination source could be identified. In many cases it may not be possible to determine whether the contamination originated from the ship or shore, hence the importance of a manifold sample.

Cargo samples necessary to protect the vessel's interests

The transfer of custody of the cargo from the terminal to the vessel, and *vice versa*, normally takes place when the cargo passes the vessel's permanent hose connections. A manifold sample taken at the start of loading and discharge can, in principle, determine with whom the responsibility for contamination of a cargo rests. But even where vessel procedures are in place and a manifold sample is taken at the start of loading, Gard often sees that there is limited understanding amongst crew of the importance of cargo sampling. It is not unusual for the crew to dispose of a sample taken of the very first product loaded, the “first drop” sample, if it does not appear to be of the expected quality. What can often make matters worse is to then draw a new sample once the cargo quality appears as expected, and this then becomes the manifold sample “on record” as having been taken by the ship at first loading. This may mean that the only evidence available indicates that sound cargo was loaded and the evidence showing that the cargo had been contaminated ashore is lost.

In addition to manifold samples, first-foot samples should be taken to ascertain that the vessel's systems and pipes are clean, in particular if sensitive and/or expensive cargoes are loaded. This will also reduce the risks associated with contamination of the entire cargo parcel.

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Taking a final tank sample after completion of loading and prior to commencement of discharge will further enable the vessel to determine the actual cause of any potential contamination on board. It can also be potentially useful for the officer in charge to request specimens of samples taken by the terminal's surveyor at the terminal pier manifold. Samples from the shore tank and shore line might also be requested. If the quality of the cargo samples from the ship and shore appear to be different, loading should be stopped in order to investigate further.

All samples should be taken in compliance with the applicable and recognised industry practices and, if possible, in the presence of a representative of the shipper or terminal. Clean sampling equipment and bottles should always be used. Closed sampling systems should be used with caution as residues of previous cargoes may be retained, also scale or rust could contaminate samples. All samples taken should be sealed and properly labelled (including vessel name, berth, cargo description, sample source, name of sampler, date and time and seal number). A note of where and when a sample was taken as well as its seal number should be recorded in the cargo log book to ensure traceability. If space allows, samples should be retained for at least one year after completion of discharge, stored in a designated place on board or delivered to appropriate storage facilities ashore. Sufficient sample amounts should be secured as it may be necessary to test the sample more than once.

Recommendations

In order to ensure the best possible defence of a cargo claim against the vessel, it is strongly recommended that shipowners foster awareness of problems related to improper sampling and have in place written procedures describing the sampling process in detail. The procedures should include and emphasise the following points:

- Cargo samples should be taken with the participation of the vessel's crew during loading and discharge. Sufficient crew competence must be applied with respect to checking and verifying the quality of the samples taken and the Chief Officer should preferably be involved in all cargo sampling. An improper sampling method can result in a poor quality sample being taken and a sample which is not necessarily representative of the cargo itself.
- The following independent cargo samples should be taken by the vessel's crew:
 - At loading:*
 - Manifold sample, taken at the vessel's manifold at the start of loading, preferably with the manifold valve in a closed position. Spot checks should be carried out at the manifold during loading whenever practicable, e.g., after shore stops and/or change of shore tanks.
 - First-foot samples, in particular if sensitive and/or expensive cargo is loaded.
 - Final tank samples, after completion of loading.
 - At discharge:*
 - Tank samples prior to commencement of discharge.
 - Manifold samples, taken at the vessel's manifold at the start of discharge.
- By far the most important sample is the "first drop" manifold sample: a sample taken of the very first product loaded. Vessel procedures should be specifically formulated to avoid any misunderstandings when it comes to ensuring that this "first drop" manifold sample is never disposed of during slopping, regardless of its apparent quality. This sample should preferably be specially marked, e.g., "FIRST DROP SAMPLE", but otherwise treated as a regular manifold sample.
- If loading is taking place by use of the vessel's hose and not the terminal's hose, samples should ideally be taken at the hose connection as a manifold sample in this case may have less value as evidence to defend the vessel.
- Clean and suitable sampling equipment should be used and the samples taken should be properly labelled, sealed and stored in designated areas. Sufficient sample amounts must be secured and the samples should be retained for at least one year after completion of discharge. Recordings should be made in the cargo log-book to ensure traceability of samples taken.

It is also recommended that shipowners instruct their officers that whenever they are in doubt as to the apparent quality of a liquid bulk cargo, they should ensure that expert advice is sought and samples analysed at the loading port.

For additional information on cargo sampling, please refer to the articles "[Cargo Sampling](#)" in Gard News No.153, "[The importance of taking \(and keeping\) samples](#)" in Gard News No.169 and to Sec.2.12.3.5 "[Liquid Bulk Cargoes - Cargo Samples](#)" of the Gard Guidance to Masters.

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