Sampling - A Guide to Reducing Contamination Claims

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Douglas Catherall of Associated Petroleum Consultants Ltd gives his recommendations for good sampling practice.

1. General Comment

In the 1970s and 1980s there were a large number of claims arising from claimed shortages said to have been due to contamination. While various inspections of vessels in the case of these ‘losses’ improved measurement techniques, procedures and equipment were introduced. Ship crews, inspectors and terminal personnel who held pre-war trained and more aware of how measurements occur. As a result, claims arising from short deliveries have been significantly reduced. The most significant source of claims associated with the transport of liquid cargo is the ‘contamination of the cargo’. This can occur on loading, during passage and/or on discharge and in all instances the first indication that the cargo is not as it should be is to ‘blame the ship’. Supertankers and receivers of cargo vessels (whomever the cargo may be) do not immediately take action against their trading partners. The easiest target is the carrier. Therefore, if new opportunities for the industry and, in particular the port authorities, to set in place certain procedures to improve the quality of sampling of the cargoes being loaded, transported and delivered. Appropriate sampling can provide vital evidence that assists in reducing the level of claims currently being presented. This article attempts to provide a guideline to appropriate sampling which should reduce the carrier’s exposure to contamination claims.

2. Sampling Procedures

Cargo surveys are generally appointed by cargo interests to draw specific samples of the cargo on board during loading, before the completion of loading and prior to the start of discharge. The surveyor should use standard techniques but may not draw samples from all possible locations, depending on the instructions. These surveyors are also able to provide duplicate samples for the carrier of the cargo. Any samples left on board the ship at the port end are generally attended for the receivers of the cargo. The carrier is responsible for the care and custody of the cargo and is expected to deliver the cargo to the nominated receiver in the same condition as was loaded in the damaged industry. It has long been the practice to draw samples on loading at the yard. If the ship’s manifest at the start of loading. 2. At the ship’s manifest on some point during loading, 3. At the ship’s manifest after loading, 4. From ship’s tank on completion of receipt. At the point of discharge similar samples (1, 2 and 4 above) are taken before and during the discharge of the cargo. These samples can be identified as:
  1. From ship’s tanks prior to discharge.
  2. From ship’s manifest at start of discharge.
  3. From vessel’s manifest during discharge.
  4. Sequence of sampling allows the surveyor to make inter-connection between the samples taken on loading and discharge, to identify when and where the contamination occurred (in the shore systems, the ship’s lines/whatever). Now it is suggested that a similar sampling regime be established in the carriage of petroleum products, crude oils and vegetable oils. Samples drawn from ship’s cargo tanks are generally drawn through the vapour locks, using ship’s sampling devices. On some occasions these initial samples indicate the cargo is off specification. In these circumstances some companies require ‘open hatch’ sampling to be undertaken. In many instances these latter samples show the cargo is in specification. Vapour locks and closed sampling equipment are prone to be contaminated with the last cargo drawn, since they have not been cleaned between cargoes, or if additives have been added to prior cargoes through the locks. Consequently, it is suggested that in circumstances where the cargo is reported to be off specification on board the ship, ‘open hatch’ sampling should be carried out and the results recorded. Obviously, obtaining representative samples is the main problem when sampling and certification should be given to the sampling equipment used. In most cases, however, closed sampling systems require a specific sample taken after the vessel is steamed. It is not preferred that the sample be used by the appropriate surveyor before used. The first consideration should be what exactly these closed samples are. Sometimes these are ‘core’ samples which only sample the cargo at a certain point in the tank. Sometimes the samples from tanks that may only open when stripping the tank bottoms. These samples are representative of the cargo in the tank, but to a lesser extent in the entire cargo. The advantage of having the samples frequently used in the cargo is that they can be used to establish the contamination of the cargo.

3. Sampling Containers

Sample containers come in varying sizes, materials, designs and colours. The most common of these are glass, plastic and metal. The design in which to type of sample container would be most appropriate to use will depend very much on the nature of the product being sampled and the outcome and storage. Each type will have its own characteristics and the choice of container must be made based on the characteristics and the container must be selected to ensure the sample is representative of the cargo. Generally, crude oils and oils are more suited to metal / plastic and products and chemicals are better in glass. In many cases, the choice of containers is for aesthetic reasons which will go through the product, but there are some that are not as effective as others. For example, some containers commonly used would make the following comments:
  1. Metal containers are generally used in tin and some are lined (e.g. lacquer lining). Some liquids may react with the tin or tin plating, and the liquids may be suitable to be contained to prevent this occurring. These reactions are also used to prevent the corrosion and the container is used in transport of the samples.
  2. Plastic containers are best used where transport of the samples will be handled by the products and the container itself is not damaged. When selecting the container the container should be made to ensure that the product as shipped is not damaged in the container.
  3. Glass containers should be used when the product is not damaged by the glass bottles is the colour. If the product being shipped to sensitive to light than brown or green glass bottles should be used in all instances appropriate containers should be obtained in order to prevent leakage through the container. The metal bottles may be exposed to temperature changes which may affect the quality of the material being stored. Given that contamination claims are generally made against the time of loading and discharge, the contamination on the vessel should not be damaged during the discharge. In some cases the shipping of the samples may take place in a separate container, which should be used in making sure that the samples are not damaged during the discharge.

4. Retention Of Samples

Samples drawn for the purposes of retention should be carefully labelled. The label should include the following information: a. Ship’s name b. Location of ship c. Date and time d. Sample type e. Type of sample drawn. g. Upper, Middle, Lower, Dead bottom, manhole spot, manifold continuous spot. i. Location from where sample was drawn. j. Tank number, manifold number, etc. k. Identity of tank in which sample is located. l. Identity of sample. m. All of the samples drawn should be sealed and a record of the seal number and the information recorded on the label should be confirmed and retained on board the ship. It is possible to have the sample container by an attending surveyor and endorsed. Generally, however, any samples will not be recovered samples taken by vessel’s crew (which is always surprising given that most sampling is performed by vessel’s crew while the samples are collected). It is also incumbent on vessel personnel to ensure that surveyors take the appropriate samples when a problem arises. Vessel’s crew should point out any tank and tell the surveyors to draw duplicate samples in the event that the surveyors do not take any (sometimes problems happen when the surveyor is not on board). The ship’s samples should be retained on board in a secure location (e.g. sample store in the fo’c’s’le). This location should not be subject to extreme temperatures as this may affect the quality of the material being stored. Given that contamination claims are generally made against the time of loading and discharge, the retention time on board the vessel should not be lengthy. However, if space allows for a longer period, it would be wise to retain samples for a period of 1 year.

5. Conclusion

Contamination claims often result in large sums of money being at stake. Often, the cause and/or location of the contamination can be quickly identified if the appropriate sampling and examination procedures are followed. In suitable conditions, and with an adequate investigation, the cause and/or location of the contamination can be quickly identified. The next step is to determine the appropriate action to take. This will allow the ship owners to take appropriate action in the event of a claim. The easiest target is the shipment and the carrier is responsible for the care and custody of the cargo and is expected to deliver the cargo to the nominated receiver in the same condition as it was loaded in the damaged industry. It has long been the practice to draw samples on loading at the yard. In most cases, however, closed sampling systems require a specific sample taken after the vessel is steamed. It is not preferred that the sample be used by the appropriate surveyor before used. The first consideration should be what exactly these closed samples are. Sometimes these are ‘core’ samples which only sample the cargo at a certain point in the tank. Sometimes the samples from tanks that may only open when stripping the tank bottoms. These samples are representative of the cargo in the tank, but to a lesser extent in the entire cargo. Now it is suggested that a similar sampling regime be established in the carriage of petroleum products, crude oils and vegetable oils. Samples drawn from ship’s cargo tanks are generally drawn through the vapour locks, using ship’s sampling devices. On some occasions these initial samples indicate the cargo is off specification. In these circumstances some companies require ‘open hatch’ sampling to be undertaken. In many instances these latter samples show the cargo is in specification. Vapour locks and closed sampling equipment are prone to be contaminated with the last cargo drawn, since they have not been cleaned between cargoes, or if additives have been added to prior cargoes through the locks. Consequently, it is suggested that in circumstances where the cargo is reported to be off specification on board the ship, ‘open hatch’ sampling should be carried out and the results recorded. Obviously, obtaining representative samples is the main problem when sampling and certification should be given to the sampling equipment used.