

IVR TECHNICAL LEAFLET

GUIDANCE ON TANK WASHING FOR INLAND CRAFT

Several parties have recorded contamination incidents occurring on inland vessels. Recent incidents have raised concerns over tank washing processes and the procedures in place to ensure this is carried out effectively and in line with good practice. In order to help the parties concerned in the event of a related claim, the following advice should be taken into account.

CARGO CONTAMINATION

The necessity for cleaning cargo tanks is dictated by the likelihood of the next cargo to be loaded becoming contaminated by the cargo previously carried and therefore no longer able to meet product specifications. For example, refined products are particularly sensitive to contamination by liquid products. Contamination of the cargo is likely to result in a substantial claim or at the very best, a depreciation in value of the contaminated cargo. Most often, the contaminated product has to be re-processed which results in high costs, or is refused for its intended purpose and therefore has to be used for alternative means or destroyed.

VERIFY IF CLEANING IS NECCESSARY

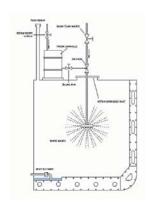
Once cargo has been discharged, the company or master should verify whether cleaning of the tanks is necessary prior to loading the next cargo and if so this process must be carried out immediately. When carrying the same or a compatible product during subsequent voyages cleaning may not be necessary, but written confirmation from the shipper should be obtained. Reference is made to the CDNI-legislation as well as the Discharge form, which needs to be filled in when discharging cleaning residue water at a discharge facility and needs to be signed by the responsible person of the discharge facility.

Consideration must also be given to the manifold which is to be utilized at the upcoming discharge point. If this is uncertain it must be ensured that the manifold which has not been utilized for the current load is also cleaned to ensure the discharge lines are fit for purpose.

THE CLEANING PROCESS

To determine how best to clean the cargo system, including the tanks and lines, publications, such as Dr. Verwey's Tank Cleaning Guide are available for the operator's reference. Alternatively the shipper or tank cleanliness inspector may be consulted. If verbal advice is obtained the instructions received should be verified by other sources.

When cleaning tanks it is important that the results are verified at each stage of the cleaning operation. The effectiveness of the cleaning process is dependent on many factors. Small deviations in the prescribed process can easily result in ineffective cleaning. In this regard, it is important to note that the solubility of a product in water is dependent on the temperature of the wash water and the product itself. If the washing water is too cold or the cargo is colder than



anticipated, cargo residues will dissolve less effectively in the wash water resulting in residues remaining on the hold structures. Furthermore, the presence of obstructions in a tank may result in *blind spots* inaccessible to the cleaning equipment.

Cleaning a vessel prior to loading is often referred to as the *washing of tanks*. However, it is imperative that the ship's lines, pumps and other elements such as drain valves, blind parts of the piping system and in some cases of (smelling) chemicals even the Vapor return line systems, incorporated into the cargo system and used to transfer the product, also receive adequate cleaning.



When washing tanks, the tank atmosphere should be closely monitored, particularly when volatile products are involved. When washing tanks with a high pressure water jet, static electricity may develop resulting in sparks which may be a source of ignition if an explosive atmosphere is present.

As most of the older inland tankers do not have cleaning equipment such as washing machines and wash water heaters fitted, and some vessels may not have sufficient storage space outside the cargo tanks for containing wash water, inland tankers often call at shore based terminals for the cleaning process. The shore based terminals are expected to be experienced in tank cleaning, however, as the barge's master is ultimately responsible for the cleanliness of the vessel, information should be obtained prior to calling at a cleaning station as to how the vessel is to be cleaned to ensure it is in line with the prevailing requirements. After cleaning the results should be verified.

Tank cleanliness inspections are often limited to a quick visual check in the tank from the deck and in the open ends (manifolds) of the lines. However, depending on the layout and design of the ship's lines, there may be sections in which cargo can become trapped such as "U" shaped (expansion) sections in lines, drain points, pumps and valves. In addition, overhead and bulkhead structures in a tank cannot be seen and verification of whether wells and areas concealed by structures are satisfactorily cleaned cannot be determined from such a distance. Therefore, a prudent inspector should always enter a tank, provided that the enclosed space entry is allowed by the terminal and the relevant permit to work has been effectively completed. After the cleaning of the cargo system, drain plugs must always be opened to confirm that collected cargo residues and wash water are flushed to a satisfactory standard.

To clean the ship's lines, water is often pumped through the system with the expectation that the water will wash the entire interior surface. However, the *level* of the flushing agent in a line must be considered and be such that the system is completely filled, ensuring that the upper part of the inside surface of the lines are cleaned. In vertical line sections the cleaning agent may fall down which results in the cleaning being ineffective. In this situation, if the system allows, the cleaning agent should be pushed up the upwards running sections.

In the final stage of the tank cleaning process and after washing the lines with water, it is common place for the pipelines to be blown with air. After this process it is often assumed that the lines are empty, however, if a line is not completely filled it will enable the blowing air to pass over the remaining liquid in the line.

THE WALL WASH TEST

In some cases the cleaning instructions recommend cleaning with hot water or steam. This is often because elements of the previously carried cargo penetrate, or are trapped in the steel of the tanks, lines or the applied coating. To get these elements out of the steel or coating, washing should be done with hot steam or with appropriate solvents. Special attention should be payed to the resistance of tank coatings and f.i. seals of pumps, valves etc. and attention to temperature limits of above mentioned materials.

To ensure all of the previous cargo has been removed a wall wash test must be undertaken. A wall wash test is often only done in the ship's tanks, however, it is imperative that the interior surfaces of lines are also free of the previous cargo residues. Operators should note that a wall wash test is only carried out on part of the surface area and therefore will only indicate whether the tested surface area has been cleaned to a satisfactory standard. The result of a wall wash test must not be considered a full proof of an entire tank or line.

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