

The Bunker Detectives®

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BUNKER GRAVITATING

(Inter-tank transfer)

About Bunker Detective:

Bunker Detective is an exclusive division of AVA Marine Group Inc.

AVA Marine is a professional marine surveying and consultancy firm – founded and led by its principal marine surveyor Kaivan H. Chinoy. The Company provides a comprehensive range of specialist marine surveying, marine loss control & consultancy services primarily in Western Canada and the West Coast of the United States

To learn more about our marine surveying capabilities, visit our website at ava-marine.com / bunkerdetective.com

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What is 'gravitating of fuel?'

Inter-tank transfers of liquids or 'gravitating' whether it may be ballast water, fresh water or fuel oil is a very common practice onboard ships. This process entails transferring liquids by "gravity" without the use of a pump.

Gravitating is carried out for various reasons - to balance out liquid levels in tanks either to reduce the free surface effect, achieving a desired list/trim and in oil tankers reducing the level of a full cargo tank (dropping the level) as a precaution against inadvertently overflowing and for priming the cargo pumps and suction lines before discharging and for various other reasons.

Since the liquid is essentially 'dropped' under gravity from a high level to a lower level - the total liquid or cargo quantity remains unchanged after gravitating because the liquids are only transferred internally in a closed system. This technique though very useful in day to day ship operations could be used during stemming bunkers by the supplier resulting in substantial shortage for the vessel.

So how goes gravitating of bunker fuel is achieved by an unscrupulous supplier?

During the opening gauge the fuel could be transferred from high level to a low level or empty / slack tank by gravity. For example a barge may have four tanks 1P/1S, 2P/2S, 3P/3S and 4P/4S. The opening gauge starts from say forward tanks 1P/1S. While the gauging is underway, the tank level of 1P/1S is dropped under gravity (note this tank has already been just gauged) to a slack or empty tank aft for example to 4P/4S. Thus essentially when the 4P/4S is gauged the same fuel quantity is measured twice.

This method is still in use and if not detected the barge can claim that full quantity was delivered to the vessel with the vessel suffering a substantial shortfall in bunker quantity received onboard. Once the bunkering has commenced it is too late to do anything and it will be virtually impossible to trace the 'missing' fuel. A thorough investigation will be needed to determine the exact SMR (stock movement record) and full disclosure from the supplier which can take many months/years of legal action and still the matter may not be resolved.

How do you prevent this mal-practice?

As a precaution against gravitating, it is imperative that the attending surveyor or vessel's representative gauges the tanks in the following sequence:

If the initial gauging is forward to aft, in our example 1P/1S, 2P/2S, 3P/3S, 4P/4S then after gauging the last tank (4P/4S) the surveyor or vessel's representative should re-gauge all tanks from aft to forward. The ullages or soundings should be exactly the same.

Also as an additional precaution, at the commencement of bunker transfer, the surveyor or vessel's representative should re-gauge the first tank(s) used to transfer fuel oil to the vessel. The reading should match that taken during the initial gauging.

Will this precaution prevent bunker shortage?

The answer is no. This article highlights one of the many techniques used to short supply bunkers. Shortages occur due to number of reasons which are outlined in our article "Malpractices in Bunkering Operations".

Disputes can arise either by innocent mistake or deliberate short supply by the barge; like introducing air to froth up the fuel (cappuccino bunkers) or giving incorrect temperatures, incorrect calibration tables, tampering with gauging equipment and so on. Also when bunker is being transferred from a refinery to a storage tank and to the barge and then delivered to the vessel, there is a lot of scope for errors and deliberate manipulations that will result in a difference (sometimes quite significant) between the quantity claimed to have been supplied and the quantity received by the ship. If this is due to an innocent mistake then probably with fullest co-operation of the barge company/ fuel suppliers and full disclosure of SMR might indicate the "missing" bunkers. However, often this is not the case and experience tells us that when disputes do arise over quantity transferred, any 'post-delivery' investigation on quantity shortages are often inconclusive especially if the shipboard personnel involved in bunkering operation have neglected the basic principles of safeguarding it's owners/charterers' rights in way of collecting and preserving evidence. Protests, legal fees, etc. all add on to costs with usually neither party actually concluding with certainty what transpired on board. A success of any bunker dispute claim will largely depend on the detailed contemporaneous written evidence by the shipboard personnel at the time the supply is made.

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