BUNKER SURVEY

Why do you need a bunker survey?

A bunker survey can be a valuable loss control tool in locating cargo losses where the ship to shore difference is greater than normal. If there is an unaccountable gain in bunker tanks or bunker volumes that cannot be reconciled, a bunker survey can help identify the causes.

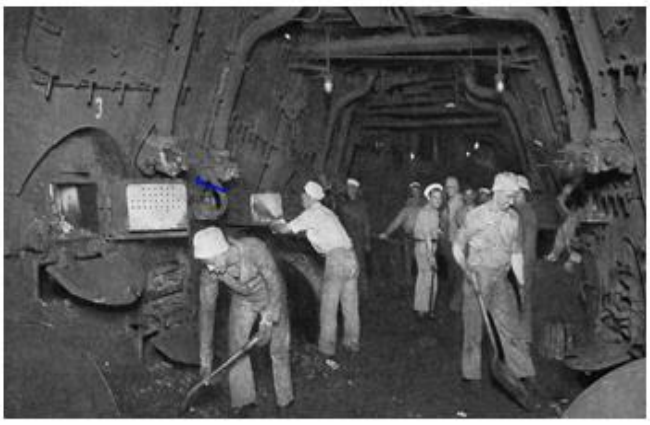
Even though the vessel's fuel system is intrinsically separate from the cargo system, intentional or unintentional cargo diversion can take place and should be monitored **especially where cargo can be used as bunker fuel.** Comparisons are made to what the bunker volumes should be based on the last fuel intake and normal consumption verses what was actually found.

What is bunker fuel?

A combustible fuel used in the operation of ship engines, generators and boilers, the latter usually for heating the cargo material being transported. In the early days of steamships, steam was produced in boilers run on coal. The compartment where the coal was stored was known as the bunker and this term has carried through to today's fuel.

COAL BUNKER ON AN EARLY STEAMSHIP

(Photo Source: Bree1972worldpress.com)



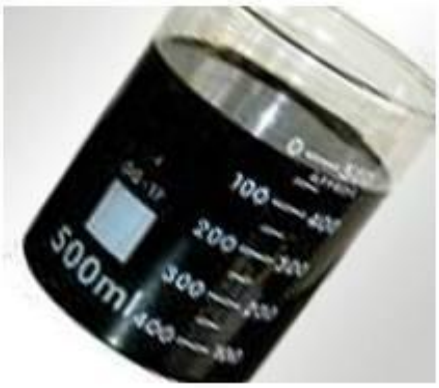
STOKING THE SHIP BOILERS WITH COAL

(Photo Source: www.cityofart.net)

Types of bunker fuels

- **MFO** (Marine fuel oil) – All types of bunker fuels.
- **MGO** (Marine gas oil) - Roughly equivalent to No. 2 fuel oil, made from distillate only.
- **MDO** (Marine diesel oil) – Low viscosity blend of heavy gasoil that may contain very small amounts of black oil feed stocks, does not need to be heated for use in internal combustion engines.
- **IFO** (Intermediate fuel oil) A blend of gasoil and heavy fuel oil, with less gasoil than marine diesel oil.
- **HFO** (Heavy fuel oil) - Pure or nearly pure residual oil, roughly equivalent to No. 6 fuel.

(Photo Source: www.shipandbunker.com)



(Photo Source: www.diytrade.com)

ISO 8217 Specifications of Marine Fuels

The International Standards Organization, (ISO), introduced a series of specifications to formalize the minimum quality required for the bunker fuels available on the market. The standard ensures the quality of bunkers taken on by the vessel will meet the fueling needs required by the engine and machinery manufacturers.

The current specification is ISO 8217 5thedition and was approved in 2012. Complying with these specification ensures compliance with Marpol Annex VI, the EU Sulfur Directive, Sulfur Emission Control Area (ECA) requirements, and other commercial, legal and quality standards. It also helps protect expensive ship engines, reduce potential down-time and compliance with environmental regulations.

Steps for Conducting a Bunker Survey

When a bunker survey is requested, it is necessary to take and record all innages / ullages, temperatures, and pull representative samples from all bunker tanks. All measurements are taken prior to the cargo transfer and then again prior to the vessel's departure. The vessel's bunker volumes are calculated again on port arrival and also at departure. The difference between these two volumes will be the vessel's fuel consumption at dock. Listed below are the procedural steps required to properly conduct a bunker survey:

1. Identify and records the number of Bunker Tanks, Depth of each Tank, Reference Height and Measuring Method (Ullage or Sounding).
2. Obtain and record the previous Bunker Report, time and place the bunkers were supplied along with the oil density.
3. Records the quantity of bunker onboard when the ship arrived (arrival Condition) as per Engine Log Book.
4. Check the Ship's Draft Marks to get the Ship Trim for Trim correction and check the ship Inclination or Listing for List Correction.
5. Gauge each Bunker Tank and record the level of Oil on the tank along with the oil temperature.
6. Sample and water cut each bunker tank.
7. Calculate the volumes in each tank using the Ship's Trim and List, Tank Quantity Table (provided by Ship's Chief Engineer), Oil Density and Temperature, ASTM Table for Volume Correction Factor (VCF).
8. Review the data obtained and report and discuss any irregularities.

Conclusion

Bunker pricing and fuel quality are critical components to a vessel's operating costs. Fuel cost can be as much as 60% of a vessels operating budget. Off specification fuel can potentially damage vessel engines and boilers. A bunker survey is relatively cheap insurance to deter product diversion. A detailed bunker survey will confirm fuel delivery and report bunker fuel shortages. If there is an unaccountable gain in bunker tanks or bunker volumes cannot be reconciled with bunker consumption, Letter of Protests are issued and an investigation can identify the causes.

For more information regarding bunker surveys, please feel free to contact Jorge Pinon, Director of AmSpec Training – New York Harbor….. jorge.pinon@amspecgroup.com or call (908) 862-7272.