

Commercial Aspects of Shipping Bunkers – Part IV

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The first of the last two of the “Bunkers Series” of five articles specifically deals with the ISO 8217 – recent changes and need for future changes. On the onset, from the commercial aspects of shipping, it is worth consideration to update the bunker clauses whether there are existing medium and long term charterparty contracts or while negotiating and signing the new contracts.

Need for standardization and ISO 8217

The primary objective of specification is to define the limits of the characteristics of a product acceptable for a particular application. ISO 8217, as with any specification, is therefore an attempt to create the necessary balances between the end use demands and the limitations of fuel manufacture.

The perception of quality itself inevitably introduces a natural conflict of interest, where the engine manufacturer demands quality fuel, the fuel manufacturer demands quality engines and the end user demands quality performance from both fuels and engines. Hence the end user's ultimate perception of quality is fitness for purpose, good value for money and consistent standard. These are indeed the objectives of a well-structured specification. The three most important principles that have been observed in construction of the previous and the current marine specification are that the specification must be reasonable, useful and economic¹.

For general information, it is interesting to note that heavy residual fuel was used in the diesel engines for the first time in 1947. Since then to cater for the changes that occurred in the industry such as increasing and varied geographical sources of crude

oil, technology for refining and blending and of course the changes in the marine engine designs, engine makers have been trying to outdo each other in the use of lower quality heavy fuels. The need to protect the environment (oil as well as air pollution) and resulting rules and regulations, development and implementation of equipment (purification, filtration and handling) over the years etc. has demanded more control on the quality of oil supplied to the vessels. Shipping is a true example of globalization. *A ship built in China, may be owned by a German, flagged in Bahamas, manned by Indians and Filipinos through a Hong Kong-based crewing agent, and operated by a Malaysian company providing liner service between Singapore and Japan²* or tramping worldwide. This ship, with its equipment on board designed to handle and burn oil within a narrow tolerance, may need to receive bunkers at any port in the world where bunkering makes sense, depending upon the bunker planning/voyage estimation. This is the driving force for “standardization” of the bunker specifications. It is important that, when buying bunkers, attention is paid to the specification of the product. As mentioned in my March article, in order to confirm that the bunkers actually supplied are the same quality as the bunkers bought, many shipowners are now using the services of an independent quality analysis service.

Time line of ISO 8217

For a quick reference, following is the time line of the development of ISO specification since 1982:

1947 Heavy fuel first used in Diesel Engines – experience since then lead to development of standards



➤ 1982 British Standard BS MA 100:1982

➤ 1987 ISO 8217:1987 as replacement for BS MA 100:1989 (1st edition of ISO 8217)

➤ 1996 ISO 8217:1996 (second edition of ISO 8217)

➤ 2005 ISO 8217: 2005 (third edition of ISO 8217)

ISO 8217: 2005, the third edition

As per Ms. Wanda Fabriek, Convenor (TC 28/SC 4/WG 6, Marine Specification) -

‘The third edition of ISO 8217 contains important changes aimed at reducing the problems and uncertainties observed with marine fuel quality’

Brief review of changes in the third edition of ISO 8217 (ISO 8217:2005)

➤ *Lesser number of grades of fuel*

The rationale for reducing the number of grades is explained by the ISO 8217:2005 as follows:

“The specifications in this International Standard were prepared in co-operation with the marine and petroleum industries to meet the requirements for marine fuels supplied on a world-wide basis for consumption on board ships. Crude oil supplies, refining methods, ships’ machinery and local conditions vary considerably. These factors have led historically to a large number of categories of

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residual fuels being available internationally, even though locally or nationally there may be relatively few categories. Several of the residual fuels are unique in origin to one country or area, but nevertheless are included in the specification because of their importance in the international marine fuel market."

Important changes:

- ♦ No changes in grades of the distillate grades
 - ♦ Residual fuels:
 - ♦ Grades reduced to 10 from 15 in ISO 8217: 1996. The changes are summarized as follows –
 - Deletion of RMC 10.
 - Renaming of RMB 10 and RMC 10 to RM A 30 and RMB 30 respectively. The difference in these two is only in density and pour points and the rest of the parameters are identical.
 - RMH 45, RMK 45, RML 45 and RML 55 are removed from ISO 8217:1996 (no difference between RM45 and RM 55 grades except viscosity).
 - RMH 55 and RMK 55 renamed RMH 700 and RMK 700 with a maximum viscosity of 700 cst at 50°C.
- *New parameters incorporated into the list of fuel properties and some limits made stricter*
- ♦ Viscosity – The reference temperature is changed from 100 deg C to 50 deg C. This has finally been done to streamline the comparison with the specification of the bunker receipt viscosity. While the bunker are purchased in the market basis kinematic viscosity of 50 deg C and measured thus, the specifications were basis 100 deg C. Hence,

majority of the fuel analysis labs were first measuring the viscosity at 100 deg C and then calculating the viscosity at 50 deg C, which may not be correct as the fuel oil may not follow a predictable behaviour and in case of dispute or for borderline cases, it may become essential to measure the viscosity at 50 deg C. Standardizing the measurement at 50 deg C in line with the commercial practice, is a good and practical way forward.

- ♦ Sulphur: Reduction of the limit from 5% m/m to a maximum 4.5% m/m is to align the limit with that ratified by IMO.
- ♦ Used Lubricating oil: This is an important parameter that has been added to the third edition of ISO 8217. While maximum limits have been imposed on levels of zinc, calcium and phosphorus (Zinc - 15 mg/kg, calcium - 30 mg/kg, phosphorus – 15 mg/kg), the breach of the specification will only be considered to have occurred if all three elements exceed their limits. In other words if one or more of these elements is within the limits, specification in this respect will be considered to be complied with. This is governed by the objective of the specification that the fuel is free from used lubricating oil and the structure of the additive compound (ZDDP) most common in automotive lubricating oil, in a particular ratio is the best indicator.
- ♦ Ash content: Reduced from 0.20% m/m to 0.15% m/m for some of the grades.
- ♦ Water: For RMD 15, the limit is reduced from 0.8% v/v and for all other RM grades (including the most commonly used RMG 35) from 1% to 0.5% v/v. This is a very good

improvement. Assuming a bunker supply of 1000 mt at US\$ 300/mt, this means that the buyer does not have to pay for approximately $0.5/100 * 1000 = 5$ tons i.e. not paying US \$ 1,500 for receiving water which his crew will then struggle to separate and then properly dispose.

- ♦ Density: For lower viscosity grades, the maximum density limit has been reduced. This will help in better separation with the existing purifiers.

Is ISO 8217: 2005 perfect?

No system is perfect. Experience gained with the passage of time in addition to stricter new rules and regulations to protect the marine environment and technological development will drive further revisions to the ISO 8217.

One such dire need is that of reducing the limit for catfines (Al+Si) in the bunkers. Next month we will review, in detail, why this is required irrespective of the widely held view in the oil industry and bunker supplier circles that due to significant improvements in the effectiveness of the shipboard treatment (centrifuges for cleaning the fuel) justifying an upward revision of these limits.

References:

¹ Wanda Fabrick (13th SIBCON 2004, 23 –25 September 2004: "Bunkering trends and Challenges for the next two years".

² Globalisation and the shipping business – a shipowner's perspective (BIMCO REVIEW 2004) – By Sham Chellaram, Chairman KC Maritime Ltd.

A new set of Specs: Wanda Fabrick, Bunkerspot, December 2005/January 2006.