Lloyd's Register

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FOBAS update: **2020 - 0.50% m/m sulphur marine fuel oils**

Applicability: All ship owners and operators

This is an update to our previous bulletin issued last year announcing the decision made during MEPC 70 to implement the 0.50% sulphur limit on marine fuels in-use from 1 January 2020 for ships operating outside Sulphur Emission Control Areas (ECA-SOx). The quality and availability landscape of 0.50% Very Low Sulphur Fuel Oil (VLSFO) will continue to evolve until 2020 and beyond. Currently, the information available is mostly reliant on predictive models and estimates being filtered into the public domain.

Various market surveys indicate that the majority of ship-owners and operators intend to comply with the MARPOL Annex VI regulation 14.1.3 by burning 0.50% VLSFO. The following information is an update addressing some of the key questions that LR is frequently being asked.

1. **How have the refiners and fuel suppliers responded so far?**

The refineries, storage depots and physical suppliers will have to contend with over 150 million tonnes of high sulphur residual fuel oil becoming surplus to demand from 1 January 2020, being replaced by the demand for maximum 0.50% VLSFO.

There have been mixed reports concerning how refineries will respond. The natural response is to build more coking plants – however these require high capital expenditure and can take more than five years to complete. There appears therefore to be little appetite for approach in view of the uncertainty of the current market. Refineries will still have to consider an outlet for the residual fuel products post 2020 when this convenient marine bunker outlet option is no longer available.

The relatively small uptake of Exhaust Gas Cleaning systems (EGCS) at this time will be unlikely to make a significant difference either. Hence there is potential for greater price differential between high sulphur fuel oil (HSFO) and 0.50% VLSFO by 2020. This may result in an accelerated number of orders for EGCS as we approach 2020 when there will be greater clarity on the business case.

We are aware that many of the major suppliers have started to put plans in place to be in the best possible position to cope with the demand for 0.50% VLSFO and capitalise on its returns. Nevertheless, suppliers need to be made aware when buyers think they will need the fuel i.e.

supply is met by demand. Dialogue between buyer and seller should begin as soon as possible to ensure a smooth implementation.

2. **What are the next steps by IMO (MEPC and PPR) to prepare for the Implementation of the 0.50% sulphur limit?**

MEPC 71 approved a new output covering the consistent implementation of regulation 14.1.3 for PPR (IMO Sub-Committee on Pollution Prevention and Response). This is expected to cover aspects such as: preparatory and transitional issues, a standard format for the non-availability clause (regulation 18.2) and guidance on technical implications, verification and enforcement, to name a few. These issues are to be addressed by PPR 5 at IMO in February 2018 and then reported to MEPC 72. The eventual output of this work is an expected circular to guide the industry with an agreed uniform approach for a consistent implementation of the regulation. Moreover, IMO (MEPC) has also formally requested ISO TC28/SC4/WG6 to consider and provide input into ensuring a consistent implementation of the regulation.

3. **Is FOBAS involved in these discussions?**

Lloyd's Register FOBAS is actively representing the interest of its clients through participation in a number of marine fuel working groups and committees in order to assist in preparing the industry for a consistent implementation of the MARPOL Annex VI regulation 14.1.3. The notable groups are CIMAC WG7 (Fuels), ISO TC28/SC4/WG6 (ISO 8217), European sustainability shipping forum sub group on Air Emissions from Ships (ESSF SG AEFS), IBIA and other sub-committees addressing future marine fuel quality challenges. Through our involvement in these working groups, FOBAS will be feeding into the discussions at IMO by carefully considering the operators requirements and concerns, as well as keeping our client base informed of developments.

4. **How is the progress of ISO TC28/SC4/WG6 (ISO 8217 standard) to address the future fuel quality challenges?**

As it stands today ISO 8217:2017 provides coverage for all marine distillate and residual fuel oils, the change in sulphur content does not alter this fact, however it is anticipated that some of the formulations that will be offered to the market will have characteristics which are unfamiliar to some ship operators. We can expect further guidance from the ISO and CIMAC fuels working groups on how best to order and manage these less familiar formulations.

After the release of ISO 8217:2017 edition in March 2017, ISO TC28/SC4/WG6 already started working on the next edition to encompass the 0.50% VLSFO which may raise additional stability, compatibility and cold flow considerations when handling and using these fuels. There is insufficient time until 2020 to develop a full revision of the standard hence one of the options being considered is to release a Publically Available Specification (PAS) as part of ISO 8217 for 2020 for the interim period. This will also allow ISO TC28/SC4/WG6 time and a better understanding of new fuel formulations to come out with a full revision by 2022/23. It is

expected that for the next two years, the group's focus will be to address two main concerns i.e. being able guard against unstable fuels and providing better indicators as to the compatibility between one fuel and another. Other aspects will be considered as they arise and which could be accommodated in the short timeline.

The marine fuel standard has traditionally worked on setting the fuel standards against known products being offered to the market. However new 0.50% VLSFO are yet to appear in the bunker market which are expected to cover a broad range of compositions. Nevertheless, FOBAS is in a good position to monitor the development of these new fuel oils as soon as they come to the market and understand their general characteristics by working through CIMAC, ISO and the ESSF. CIMAC WG7 (Marine fuels) have already started working on a guidance document to assist the buyers on how to order and best manage the new fuels which is expected to come out before the 2020 deadline.

5. What is the global outlook for 0.50% VLSFO availability?

As well as the IMO Delft Report declaring that refineries have the capacity to produce the compliant fuel required, a number of suppliers have publically stated that compliant fuels will be available before 2020, although a consistent distribution of this 0.50% VLSFO may take a little time. There is always likelihood that a few smaller ports may not have these fuels available due to storage facility limitations. This may force ships to bunker 0.10% Ultra Low Sulphur Fuel Oil (ULSFO) grade with the additional cost implication on the charter party.

6. When will the fuels become available?

This question is unlikely to be answered until mid-2019 and will very much depend on when demand starts to occur. It will need to be taken into account that the supply chain also has to prepare by cleaning out HSFO from the storage tanks and barges and their transfer pipelines, which will be a logistical challenge for the complete supply chain. The onus is on the shipping industry to discuss with their supply network how the 1st January 2020 can be met and consider the timeline for when ships will need to ensure they have used up all the HSFO and prepared the tanks for 0.50% VLSFO (these may well need early inspection for the degree of cleaning required to avoid contamination).

7. What are the potential fuel quality concerns with these new fuels?

The biggest concern being raised at this time is the long term storage stability and in particular compatibility between two different bunkers. There will be a much higher frequency of paraffinic based fuels coming into the market, which will not only increase the need to address higher pour points but also the general cold flow properties of marine fuel oil.

It is expected that the majority of the 0.50% VLSFO will be light residual products with viscosity between the current distillate (DM) and residual (RMG) grades of ISO 8217 (table 1 and 2). Moreover, relatively lighter blends would make it easier for any catfines to readily separate

however this may warrant increased monitoring and cleaning to remove accumulated catfines from tank bottoms.

FOBAS will be developing the characterisation of the 0.50% VLSFO once there is significant take up by the industry. We understand that the China Sulphur Control Zones offer an opportunity for suppliers to supply 0.50% VLSFO which may provide a useful insight into what these future fuels might look like.

8. What ship operators need to do now?

Transition has started and this will cease on 31 December 2019 as enforcement agencies will expect ships to be fully compliant on 1 January 2020.

See below some important preparatory considerations:

- Ships will need to review their fuel management strategy/plan to include the management of the expected diversity of fuel compositions, such as there being sufficient tank storage options to build in flexibility to avoid commingling two different bunkers.
- Considering the expected variability and unconventional blends coming into the marine fuel market, the key challenge will be for the ship's crew to understand the likelihood that each bunker loaded will have different characteristics from the previous bunkers despite a similar ordering specification. This will require particular attention to:
    - Storage requirements (cold flow properties, compatibility and possible need for segregation between new and old bunker)
    - Handling and conditioning (correct purification set up)
    - Use (correct viscosity control)
- Consider the cold flow properties in accordance with ISO 8217:2017 (i.e. sufficient heating capabilities in both residual and distillate fuel tanks).
- Ship owners should start dialogue with charterers and suppliers/traders with regards to the transition period for starting the switch to using 0.50% VLSFO which could be around October/November 2019.
- Ensure ships are already familiar and experienced in using such fuels before the deadline both with regards to technical implications and operational.
- Consideration will need to be given to preparing the tanks for the switch to 0.50% VLSFO and this may require tank cleaning of the remaining high sulphur fuel oil and sludge remaining on tank bottoms.
- Installation of voluntary designated fuel system sampling point in strategic positions is recommended as this would facilitate any inspectors request to take samples in a safe manner (see FOBAS Guidance for further information).

The experience of using the 0.10% ULSFO for both residual based and pure distillate operations will stand you in good stead for tackling these new 0.50% VLSFO's. It is well recognised however, that there are many thousands of ships that have not yet truly experienced operations on much else other than high sulphur residual fuel oils and the occasional switch to distillates, this would suggest that the lessons learnt by some from the switch in 2015 will have to be learnt by many more for 2020 and the same technical and operational warnings will need to be reiterated.

We will be issuing further updates on this important topic when there are significant developments. In the meantime, we would welcome your feedback and any concerns/questions you like us to raise in various industry forums, please email fobas@lr.org or speak to one of our consultants by dialling +44 330 414 1000 (Southampton, UK), +44 1642 440991 (Redcar, UK), +65 3163 0888 (Singapore), +30 210 4580 932 (Greece).