



Sulphur Guide

Dealing with the Sulphur Cap 2020 and beyond

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Background



The Marine Environment Protection Committee (MEPC) confirmed in July 2018 that the new global sulphur limit for marine fuel of 0.50% m/m will apply from 1 January 2020.

Further, amendments to MARPOL Annex VI which prohibit vessels from carrying fuel oil with a sulphur content of more than 0.50% m/m have been approved by the IMO. Such measures will come into force on 1 March 2020, after which only vessels which are equipped with Exhaust Gas Cleaning Systems (i.e. scrubbers), will be exempt from this prohibition.

This provided worldwide shipping with possibly one of its greatest regulatory challenges for many years, and a majority of the marine industry is simply not ready.

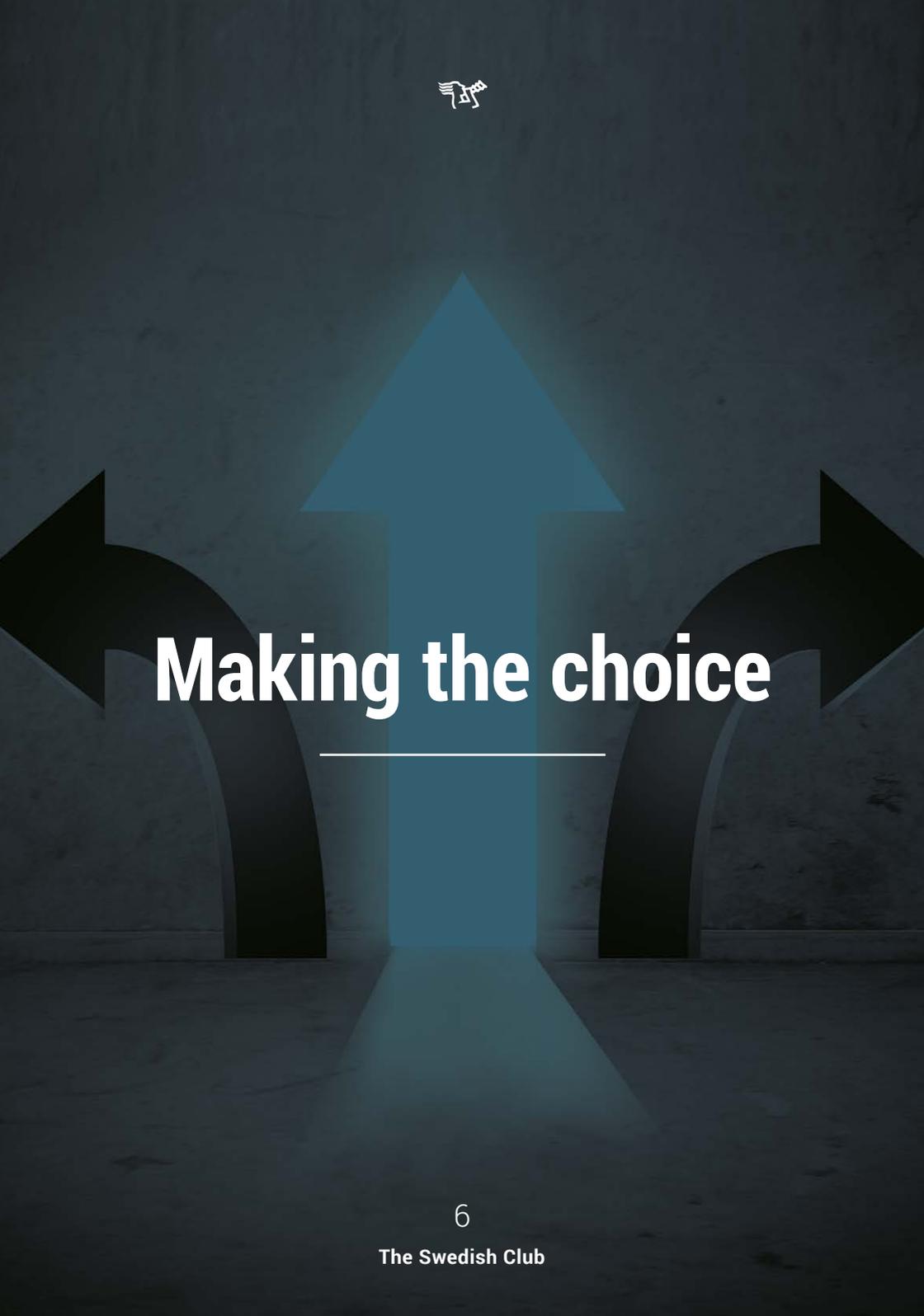
Shipowners and operators were hoping that the IMO MEPC would recommend a delay in the implementation of the Regulation 14.1.3 of MARPOL Annex V. This would have given them more time in which to make a decision as what their strategy would be regarding the choice between low sulphur operation

or installation of exhaust gas cleaning systems.

If there had have been a delay, it would have given refineries time to gear up for a production switch from high sulphur heavy fuels (3.5%) to low sulphur fuels (0.5% or lower); however it now appears that the IMO will not deviate from the 2020 date, and an estimated production switch of up to 4 million barrels per day will be required to satisfy the demand of non-scrubber vessels. This requirement will place considerable strain on the worldwide infrastructure of marine fuel supply, and consequently result in an expected rise in fuel prices of compliant fuel.

The rise in fuel costs is a big unknown and market analyst's figures range between USD 100 per tonne to USD 600+ per tonne, showing that even the experts have no idea of the potential cost spread between high sulphur (HS) and low sulphur (LS) fuel; this spread is seen as an opportunity by some operators but a massive risk by others.

One thing it will produce, at least at the beginning, is a two-tier charter market – scrubbers installed versus no scrubbers.

A large blue arrow pointing upwards, flanked by two large black arrows pointing outwards, set against a dark background.

Making the choice



Vessel operators have two choices, install an exhaust gas scrubber or burn LS or alternative fuels, and to make that choice there are a number of considerations:

Scrubber vs low sulphur fuel - considerations

- How much fuel do we burn
- How old is the vessel
- How much time do we spend at sea
- Where do we operate
- How much space do we have
- How much spare power do we have for additional equipment
- What sort of charter agreements do we have
- What ROI are we going to get

Fuel consumption

Firstly, the size and fuel consumption of the vessel is probably the first consideration; if an owner has a large vessel with high fuel consumption, then the gamble whether or not to install a scrubber is purely based on current cost of fuel versus predicted future cost.

Age

Vessel age is important as there is no point in installing a scrubber if the vessel will be subject to scrapping in the near future, as the capital expenditure will not be recouped. It is predicted in some quarters that the new regulations will indeed lead to early scrapping of older tonnage as it will not be economical to operate.

Operating conditions

Owners of large vessels with operating profiles that involve the majority of time steaming in open water are likely to find that these vessels will benefit from installing a scrubber. If, however, an owner has a vessel that has a low power output and/or spends a higher

proportion of its time in Emission Control Areas (ECAs) or port, then it is likely a scrubber is not the best choice, unless they consider installing a hybrid system that would allow the vessel to operate in these areas without fear of compliance issue both now and in the future.



Space

Space for scrubbers is more of a consideration on some vessels than others. Most passenger vessels are forced to install scrubbers in the funnel space due to a reluctance to surrender valuable deck space, and to keep the vessel's looks aesthetically pleasing. In order to satisfy these requirements, in-

line scrubbers that replace the silencers are generally installed. However on larger vessels, such as crude oil tankers and large dry bulk vessels, space is not such an issue and the scrubber can be installed internally in the funnel space or alternatively as an additional structure on the funnel.

Power

Additional power to run the scrubber system needs to be considered, especially now that many vessels are required to run ballast water treatment systems (BWTS). For a Suezmax tanker, the average power to run a scrubber system is approximately 250KW, this along with up to 300KW for a BWTS, would put a significant strain on the power distribution system of the vessel and would probably result in running an extra generator when the systems are in use. This of course will increase the fuel consumption and also result in additional maintenance for the vessel's already stretched crews.

Charterparties

Many law firms are now in the process of redrafting 'scrubber clauses' for owners into charterparties. This has a significant influence on the choice as to whether or not they need to install a scrubber and will be explored later in the publication.

ROI

Return on Investment (ROI) depends on a number of factors: The cost of installing the scrubber; the fuel consumption of the vessel; and the cost spread between LS and HS fuel. Experience has shown that the ROI ranges from eight months to 24 months,

with most manufacturers predicting around the 14 – 16 month mark, with the spread at the lower end of the predictions. This level of ROI is very attractive to owners who have the finance in which to invest in scrubber systems.



Choosing low sulphur fuels



The vast majority of operators are currently making the decision between installing exhaust gas scrubbers or choosing LS fuels. The issues surrounding the use of alternative fuels, such as LNG, are too complex to be dealt with here and we suggest that you refer to an expert source, such as the Society for Gas as a Marine Fuel (SGMF).

If an operator decides to choose LS fuels there are a number of points to consider.

Preparation

Firstly, all the fuel tanks; fuel treatment equipment, such as purifiers, clarifiers and heaters; and piping containing the high sulphur fuel, need to be drained and cleaned to avoid contaminating the new bunkers and rendering the vessel non-compliant. This is not an easy task as the vessel operator will need to plan very carefully. They must either run down the onboard stocks of the non-compliant fuel, without risking running out, and then clean all the contaminated tanks

and equipment in one hit; or they must progressively clean the tanks as the fuel is used, and pump the final residues off before the 1 March 2020 carriage ban comes into force.

This necessity for tank and equipment cleaning is costly, time consuming and cannot be done whilst the vessel is trading – it is likely that at this stage, many operators have not yet considered this issue.

Component wear

The burning of distillate fuel can cause issues with engine components (such as fuel pumps) due to the low viscosity of the fuel, which may cause excessive wear and scuffing due to its inadequate lubrication properties.

required to use cylinder lubricating oil of low BN* (15 to 40), as operating the engine with an unmatched lubricating oil to the fuel's sulphur content could risk increased wear due to scuffing or excessive corrosion.

Vessels with two-stroke engines running on low sulphur content fuels will be

Vessels with four stroke engines should also need to switch to an oil with a



lower BN for long term operation; however, all vessel operators should contact the equipment manufacturer for the recommended lubricants for the particular engines installed in the vessel.

Many engine manufacturers have offered replacement parts for their fuel systems to prevent accelerated wear, but at a significant cost to the vessel operator.

Older engines

The lower viscosity of distillate fuels may be problematic for some engines, especially older, worn, engines and may result in starting issues due to insufficient injection pressure being generated. This problem can be alleviated by raising the viscosity of the fuel by use of additional coolers, or in some cases by the installation of chillers in the fuel system.

However, as inconvenient as it may seem to install additional equipment or replace worn components, this is clearly a cheaper CAPEX option than the installation of a scrubber system, and also does not require extra crew training or the additional man-hours required to run and maintain an exhaust gas cleaning system.

Availability

The availability of marine gas oil (MGO) or distillates is a concern from the outset and it is very likely that the price differential between compliant fuels and HS fuels used in conjunction with an exhaust gas cleaning system, could be quite high, therefore giving considerable commercial advantage to scrubber equipped vessels.

Compatibility

The supply of the new blends of compliant fuels will likely result in some compatibility and stability issues and will require extra vigilance when bunkering this type of fuel. In order to reduce the risk of incompatibility, vessel operators will

need to prepare for increased segregation in line with standard bunkering procedures and must work closely with their bunker suppliers to ensure that compatible fuels are supplied.

**The base number (BN) can be defined as the oil's ability to neutralise acids that are produced during use. The higher the base number in the engine oil, the more acid it will be able to neutralise.*



Choosing scrubbers



Systems

The massive majority of systems on the market are 'wet' scrubbers, i.e. they use seawater for the scrubber surface, and these are dealt with in this publication. Wet scrubbers come in a number of different guises: open-loop, closed-loop, hybrid, U-type, and in-line; and the decision as to which ones to use depends on the vessel type, operating profile and price.

Open-loop

Open-loop scrubbers are ideal for vessels operating in open waters and completing a significant amount of sea miles. The system basically takes the wash water from a seachest and pumps it through the scrubber, removing a majority of sulphur from the exhaust gases, and discharging it over the side (generally without any treatment).

Closed-loop

Closed-loop is more popular with owners whose vessels trade in ECAs and spend more time in and out of port and on coastal trade. A closed-loop system operates on a similar principle to that of an open-loop system except that the wash water is treated after the scrubber to prevent any soot/sludge going overboard. This sludge is retained on board for disposal in a suitable port facility when the vessel docks.

Hybrid

A hybrid system is more expensive and complex and can be operated in open-loop or closed-loop mode. It has the advantage of not having to treat the effluent during open-loop operation in open, unrestricted seas, but also has the flexibility to operate in coastal/ restricted waters or ports.

In-line

In-line scrubbers are installed in the original uptakes of the engines and generally replace the silencers. These systems are popular on passenger vessels and container ships, but not so much on larger bulk vessels (wet and dry).

U-type

U-type scrubbers have become the most popular type in the industry as they can be installed externally from the funnel and do not require major remodelling of the funnel internals. The installation of a U-type scrubber is generally quicker than an in-line system as there can much more pre-engineering carried out prior to installation.



Installation

There are many steps that the owner needs to take to retrofit a scrubber system. Having decided on the scrubber type suitable for the vessel operation, a choice of system manufacturer is required and this will primarily be based on price, delivery time, and track record.

Cost

Fully installed prices for an open-loop system for a VLCC range from USD 2.8 million to over USD 6 million, and delivery from seven months to over two years. These prices and delivery times are very dynamic and both have been seen to increase over the last two months due a substantial increase in orders.

Fitting

The next issue is to find a shipyard that suits the vessel's trading area and schedule, and to open negotiations on availability, price and installation time. Clearly, to be able to dock the vessel during the classification survey schedule, and install the scrubber at the same

time, is commercially attractive for an owner (and charterer). However this is not always possible due to the scrubber delivery time. Current installation time is estimated between 35 – 40 days; this is expected to reduce as yards become more experienced at retrofitting.

Preparation

The owner is required to conduct a 3D scan of the engine room and funnel areas in order to establish the space required and piping runs etc. Following this, a comprehensive engineering package must be prepared and presented to the classification society for approval, and also sent to the shipyard for final pricing and scheduling. It is not necessarily

commercially attractive for vessels where the existing seachest does not have the capacity for the additional sea water demand, and that are outside their survey window, to enter a dry-dock in order to install a new seachest and overboard. Alternative options for completing the underwater work whilst the vessel is alongside need to be explored.



Availability

Shipyard availability has already become an issue for many owners and could end up offering the biggest challenge in the retrofitting of scrubbers. The IMO has in some respect created the 'perfect storm' for shipyard demand by introducing the new Annex VI sulphur cap at the same time as the delayed BWTS requirements. These two regulations, as well as the

demand for docks for regular repairs and survey work, have resulted in unprecedented demand for shipyards, particularly in the Far East, consequently pushing up prices for yard space. It should also be noted that some of the major Chinese shipyards have already put up 'Full for 2019' notices.

Operation

After the system is installed its performance is required to be certified in order to ensure that the exhaust discharge and water discharge is compliant with the required regulations. This will be completed and verified by the attendance of the vessel's classification society surveyors whilst on sea trials.

It would be expected that the vessel operator and scrubber manufacturer will ensure that the crew will complete an operating course on the new equipment to ensure that they are competent in its maintenance and can ensure that the equipment remains compliant with the regulated operating criteria.

Although there is no universal agreement, the compliance of the system would be monitored by port state authorities and compliance

checked by the use of fuel sampling, local testing of the discharges, remote monitoring of the continuous emissions monitoring system (CEMS) and water monitoring system (WMS), and inspection of the onboard history records of the CEMS and WMS.

It is of concern that when this extra equipment is installed on the vessel, along with ballast water treatment systems, a majority of companies (with the exception of many cruise vessels) will not increase the number of staff members to operate and maintain the machinery. This will inevitably lead to situations where human error will result in compliance issues in way of non-performance of the system or even pollution incidents particularly whilst the vessel is in harbour, which in normal circumstances is traditionally already a busy time for crew.



Technical problems

Apart from the obvious non-compliance issues that will inevitably occur, a number of issues arising from the installation of exhaust gas scrubbers can be foreseen.

Failures of technology

Apart from the well-known existing large manufacturers, there are so many companies that have started in the business of scrubber production that there will inevitably be failures of technology or even the financial failures of the entire company (as has already been seen with ballast water treatment systems).

Outfitting

Due to the relative inexperience of shipyards in installing retrofit scrubber systems, it is almost inevitable that there will be quality issues with the outfitting. Potential problems could include vibration issues, due to the additional structure required and the long pipework runs, and corrosion problems due to the aggressive nature of the acidic properties of the sulphur. This corrosion is already manifesting itself in the pipework of some existing systems and the shell plating around the discharge area.

The corrosion in pipework systems has now been somewhat mitigated by the use of glass re-enforced plastic (GRE) pipework and higher grade, and sometimes coated, stainless steel pipework at the wash water outlet of the scrubber and at the ship's side. On newer projects the area of the shell plating where the overboard is located has had a chemical resistant coating applied to prevent any corrosion. It is of note that classification societies now require an annual inspection of the exhaust gas scrubber system pipework to check for corrosion.

Impact on operation

The installation of a scrubber system may have an impact on the operation of any engine/boiler to which they are added, and may cause excessive exhaust system back pressure. When choosing a scrubber manufacturer it is important to calculate the new back-pressure of the system.

Following that, liaise with the engine/boiler manufacturer to establish as to whether it is within the acceptable design parameters in order to keep the engine compliant with the certified NOx emissions and not affect the warranted fuel consumptions and the Energy Efficiency Design Index (EEDI) of the vessel.



Chemicals and waste

For closed-loop/hybrid systems there is also the issue of the handling and storage of the bulk chemicals that are used to treat the acidic wash water in addition to the handling and storage of the waste products from the wash water treatment. The storage of such chemicals and waste can cause major issues for shipowners. Currently,

there is no particularly comprehensive infrastructure for the supply of the chemicals, nor disposal facilities for the waste; therefore the vessel will be required to have the capacity to store and carry a large amount of these substances until they reach ports that can handle them on and off.

System failures

In the case of system failures, it could be that the vessel does not have enough compliant fuel (if any) in order to get to a port where either the scrubber system can be repaired or compliant fuel can be loaded. This would assume there are clean tanks. This scenario would mean that the vessel would be

running on high sulphur fuel without any exhaust cleaning and, currently, there is no guidance as to whether the ship operator would be exempt from any potential penalties for non-compliance with the regulations due to technical problems with the scrubber system.

Quality

Due to the expected initial problems with the worldwide availability of low sulphur fuels it is anticipated that quality may be an issue, especially where fuels are needed to be blended. There are likely to be a number of bunker claims and even engine failures until the initial supply problems and infrastructure are settled.



Conclusions

It is still early days with regard to the installation and commissioning of retrofit scrubber systems and it is difficult to say whether or not all the systems will be a success and perform within the required regulations. However, it is clear that systems that have been installed previously at newbuild appear to be working well and with very few reported issues.

Most of the current analysis suggests that from 1 January 2020 there will be initially a significant increase in low sulphur fuel prices and possibly shortages in some areas. During this period, owners that have installed exhaust gas scrubbers will undoubtedly benefit financially, however it is unclear as to how long this period will be.

There are still many questions about how the emissions compliance will be policed around the world and it may be the case that local area authorities have their own guidelines. This will undoubtedly cause initial confusion and could lead to vessel fines, and possibly even detentions.

A majority of operators are installing open-loop systems and most, if not all, of these systems discharge all of the sulphurous wash water overboard in the open sea. It is of note that MARPOL ANNEX VI is concerned with air pollution

and, whilst it is without doubt that the SO_x air emission reduction will be environmentally beneficial, it may be the case that the problem is simply being moved elsewhere.

We have seen some countries considering banning any overboard discharge from scrubber systems in their territorial waters, causing a rethink in the type of scrubber installed. It appears many owners are already preparing for this by installing open-loop systems that are 'hybrid ready'. This involves conducting a pre-engineering survey for a hybrid system and installing the necessary piping connections in order to speed up the conversion to a full hybrid system.

There are interesting times ahead in the shipping industry's relationship with the marine fuels suppliers and this will likely be somewhat tested in the months following 1 January 2020.



Compliance with the law

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The new rules have legal implications, both in terms of compliance, and in relation to the terms of their charterparties, which need to be considered.

Legal framework

MARPOL Annex VI contains rules limiting the main air pollutants contained in ships' exhaust gas. Regulation 14 governs sulphur oxide (SO_x) emissions, and the sulphur content permitted in fuel oil used on board ships has been progressively reduced in stages, as follows:

SO_x limit outside ECAs	SO_x limit inside ECAs
< 4.50% m/m prior to 1 January 2012	< 1.50% m/m prior to 1 July 2010
< 3.50% m/m on and after 1 January 2012	< 1.00% m/m on and after 1 July 2010
< 0.50% m/m on and after 2020	< 0.10% on and after 1 January 2015

Compliance with Regulation 14 is mandatory, and that will continue beyond 2020, though 'relevant circumstances', i.e. mitigating factors, including the non-availability of compliant fuels, will be considered in cases of non-compliance (see p26).

Regulation 18 sets requirements in relation to fuel oil quality, and requires amongst other things that a bunker delivery note (BDN) stating the sulphur content of fuel must be kept on board and available for inspection for three years from the date of supply.



Compliance and enforcement

It is the individual states who are responsible for determining what 'control measure' to take against a vessel for non-compliance: this can include the imposition of fines (the level of which will be set by the state finding the breach), and even the detention of the vessel.

It is the shipowner (via their P&I insurers) who pay any fines levied for non-compliance in the first instance, and they will be required to show what was done to try and achieve compliance,

which will likely impact on the action taken against the ship. Shipowners would also be exposed to claims from their P&I insurers if the cause of any non-compliance caused the owner to breach the terms of their P&I insurance.

Whether or not any fines or other losses incurred on account of non-compliance are recoverable from a charterer will depend on the terms of any charterparty, and the cause of the vessel's non-compliance.

Practical and legal issues

New charters entered into prior to 1 January 2020, but which will extend beyond that date, will need to contain specific terms to deal with the new regime. To assist, BIMCO has now issued two sulphur content related bunker clauses: the BIMCO 2020 Marine Sulphur Content Clause for Time Charter Parties, and the BIMCO 2020 Fuel Transition Clause for Time Charter Parties.

However, shipowners should also review the terms of existing charterparties which extend beyond 1 January 2020. If uncertainty exists then it is advisable to agree certain addenda with charterers so as to avoid any potential disputes in the future.



Example

Your ship is on a long-term time charter, based on the NYPE 46 form. The charterparty contains a clause paramount, the BIMCO Bunker Fuel Sulphur Content Clause for Time Charterparties 2005 and the BIMCO Bunker Quality Control Clause for Time Chartering, and also provides: 'Bunkers on redelivery to be about the same as on delivery: BOD ABT 250 MT HIGH SULPHUR FUEL, ABT 400 MT LOW SULPHUR FUEL', and 'HSMGO USD350/MT, LSMGO USD500/MT BENDS'.

Below are some of the issues which might arise, and the differences in that regard between ships with scrubbers and those without:

Seaworthiness

Clause 1 and the clause paramount impose on owners a duty to exercise due diligence to make the vessel seaworthy at the commencement of each voyage performed under a time charter. As part

of that obligation, the owners must maintain the vessel's class and ensure that it complies with international and national maritime rules and regulations, i.e. is 'legally fit' for the chartered service.

i) No scrubbers

If a vessel requires modifications in order to comply with new legislation, then a failure to make such modifications would render the vessel unfit for the chartered service, meaning all down time and associated costs would be for owners' account. This is as per the court of appeal case of the *Ellie & the Frixos* [2008] EWCA Civ 584.

Generally, however, unless the terms of the charter require it, an owner is not obliged to install

scrubbers. This is on the basis that the vessel will be capable of performing the chartered service using low sulphur fuel. In contrast, if a vessel needed modifications in order to be able to burn compliant fuel, this is for the owners' cost and account. Provided vessels can burn compliant fuels then the vessel will not fall foul of the new rules and will not be unseaworthy, or unfit for the chartered service simply by virtue of having no scrubbers.



ii) Scrubbers installed

Generally, the time and cost involved in the installation of scrubbers is a matter for owners. Installation of scrubbers will have an impact on the owners' maintenance obligations, including crew training, in order to deal with this new piece of equipment. Owners will be liable should their crew not be properly trained in the use of the scrubbers.

Further, if the scrubbers break down the costs of repair will

obviously be for the owners' account, and if any time is lost in effecting repairs, it will be an off-hire event under clause 15. If excessive low sulphur fuel is consumed due to the breakdown of the scrubbers (which would otherwise allow the use of cheaper high sulphur fuels), then this may also raise a claim by charterers for the difference in fuel prices (subject of course to establishing the breakdown was caused by a breach of charterparty).

Cost of bunkers

Charterers are to provide and pay for all fuel whilst the vessel is on hire (see clauses 2 and 20 of the NYPE). Charterers will be required to supply fuel which complies with the new sulphur limit, in line with ISO 8217 standards, and which is 'of a quality suitable for burning in the vessel's engines and auxiliaries'.

i) No scrubbers

Charterers will be required to provide fuel which complies with the new sulphur limit, the cost of which will be at the charterers' risk. It has been predicted that the increased costs could be as much as around USD 600 per tonne.

ii) Scrubbers installed

Charterers will be able to purchase fuel oil with a higher sulphur content (< 3.5% m/m), and will therefore benefit from lower fuel costs in the short term. This is likely to make vessels with scrubbers already installed more attractive to prospective charterers, although a long-term charterer may be able to offset these costs by sub-chartering out the vessel.



Quality of bunkers / Removal of non-compliant fuel

Under the BIMCO Bunker Fuel Sulphur Content Clause, charterers are required to supply bunkers of such specifications and grades to permit the vessel to comply with the maximum sulphur content requirement of any ECAs within which the vessel is ordered to trade. This includes all waters regulated by the E.U (EU Directive 2005/33/EC, amending Directive 1999/328/EC).

The BIMCO quality control clause requires charterers to supply bunkers which

comply with ISO 8217 standards, and which are 'of a quality suitable for burning in the vessel's engines and auxiliaries'.

The above clauses do not expressly deal with the new sulphur limit outside ECAs. Whilst no doubt BIMCO will publish a further clause in due course, the new global limits do not specifically alter the terms of these clauses.

i) No scrubbers

If the expected prohibition on the carriage of non-compliant fuel is approved then ships without scrubbers will not be permitted to carry fuel with a sulphur content of more than 0.5% m/m beyond 1 March 2020.

In order to assess the relevant control measure (i.e. fine or other measure) States shall 'take into account all relevant circumstances and the evidence presented to determine the appropriate action to take, including not taking control measures' (per Regulation 18(2)(c) Annex VI).

At present, it is understood that oil companies are working on

perfecting blends for compliant fuel. There remains a question mark as to what extent compliant fuels will be readily available, but fuel suppliers, who will each be looking to steal a march on their competitors, are apparently quietly confident in that regard.

Parties to MARPOL are encouraged to promote the availability of compliant fuels in accordance with Regulation 18.1, but Regulation 18.2 provides that ships should not be required to deviate or 'unduly delay the voyage in order to achieve compliance'. However, not all countries with bunkering ports are signatories to MARPOL Annex



VI, for example Algeria, Bahrain, Saudi Arabia, and Thailand. (Interestingly, the UAE is also not a signatory to MARPOL Annex VI. Certain ports within the UAE have taken the decision to comply, although this does not include Fujairah, even though local suppliers appear to have taken a commercial decision that they will comply.)

Where non-compliant fuels are all that is available then, taking into account the vessel's trading patterns, and with safety being of paramount importance, it is possible that necessity will dictate a vessel is supplied with (and will likely have to burn), non-compliant fuel.

However, notwithstanding the terms of Regulation 18, that vessel would still be in breach of Regulation 14. A lack of available compliant fuel acts only as a mitigating factor which would be taken into account by the MARPOL state when deciding what action to take against the vessel for non-compliance. It will not necessarily excuse the breach.

In such circumstances, it is suggested that the consequences

of carrying and burning non-compliant fuel would be recoverable from charterers. This is either on the basis that charterers are liable to supply fuels (and have accordingly breached an obligation to supply compliant fuels), and also on the basis of an indemnity for following their orders to stem non-compliant fuel. The fact that non-compliant fuel was not available would not protect charterers from such claims under the charterparty.

A further issue which arises is that a vessel subject to a long-term charter may have non-compliant fuel on board post 1 January 2020 (such fuel having been compliant prior to 1 January). Such fuel ought to be removed prior to 1 March 2020. So, who pays for its removal?

If charterers have, prior to 2020, supplied fuel to a vessel which will not comply with the new rules, then if that fuel remains on board, it is suggested that charterers would need to give an order that it be removed prior to 1 March 2020, failing which the vessel will be in breach of the new rules, and Regulation 18(2)(c) would be applied by the relevant state party to MARPOL.



The fuel on board a time chartered vessel belongs to time charterers. Therefore, it is for them to remove it, and it is also theirs to re-sell or re-process as they see fit.

If charterers refuse to give the vessel orders to remove the non-compliant fuel, or do not do so within the relevant time, it is also suggested that the costs of removal would be recoverable from charterers. The legal basis for this would either be breach of an implied term that they are responsible to remove such fuel

from the vessel or by way of an indemnity. Any fines levied against the vessel for non-compliance post 1 March 2020 would also be recoverable from charterers.

If non-compliant fuel is supplied after 1 March 2020 on account of compliant fuels being unavailable, vessels will likely be required to remove it at the earliest opportunity (but without having to deviate or unduly delay the voyage), and replace it with compliant fuel. This will again be carried out at charterers' time and expense.

ii) Scrubbers installed

Ships with scrubbers will not be required to remove non-compliant fuel, and will be able to continue being supplied with it, and burning it on or after 1 March 2020. This gives such vessels a further commercial advantage.

Bunkers on redelivery / Definition of bunkers

In our example, the cost of the bunkers at both ends would only apply to high sulphur marine gas oil (HSMGO) and low sulphur marine gas oil (LSMGO). Actual cost would apply to all other

fuels. However, in relation to delivery and redelivery quantities, bunkers have only been defined as 'high sulphur fuel' and 'low sulphur fuel', in line with the two categories of bunkers available today.



It may of course be the case that the charterparty fuel prices (agreed pre-2020) do not reflect the cost of buying fuel post 2020. However, the parties will be stuck with the bargain that they have reached, with the result that charterers in our example could end up 'selling' bunkers on redelivery to the owners at a significant discount. From 2020 however

there will be three categories: fuel with sulphur content of (a) $< 0.1\%$ m/m, (b) $< 0.5\%$ m/m, and (c) $< 3.5\%$ m/m.

It is suggested that post 2020, in all cases, 'low sulphur fuel' should sensibly be interpreted to mean fuel with a fuel sulphur content of $< 0.1\%$ m/m. So the charter prices would apply accordingly.

i) No scrubbers

Vessels with no scrubbers installed will not be permitted to be supplied with or burn today's so-called 'high sulphur fuel'. In such circumstances it is

suggested that 'high sulphur fuel' on redelivery should sensibly mean fuel with a sulphur content of $< 0.5\%$ m/m, i.e. category (b) above.

ii) Scrubbers installed

Vessels with scrubbers installed will be permitted to carry fuel with a sulphur content of $< 3.5\%$ m/m. In such circumstances it is suggested that 'high sulphur fuel'

on redelivery would mean fuel with a sulphur content of $< 3.5\%$ m/m, i.e. fuel which meets the current global limit (category (c) above).

A sensible solution would be for parties to discuss addendums to their existing charterparties to deal with any uncertainty over the quantity and cost of specific fuels.



Switching fuels

Different limits on sulphur emissions exist inside and outside of ECAs, and this will continue beyond 2020. Switching fuels has become commonplace, and will also continue.

Crew competency issues sometimes arise when vessels switch to different fuels and

cases have arisen where breakdowns and delays have occurred due to switching over fuels. If issues arise from switching fuels, then the vessel will be off-hire, and owners would not be entitled to an indemnity from charterers. Such matters are for owners as they relate to the use and management of the vessel.

Performance warranties

Charterparties usually contain performance warranties giving specific speed and consumption allowances for different fuels. The performance warranties given on vessels with scrubbers are not likely to be affected.

However, any warranty given for specific fuel types may no longer apply, or may need revision.

Owners should check the wording of performance warranties in existing charterparties, and should not provide performance warranties relating to any new fuels without knowing how the vessel will actually perform whilst using them. Owners may wish to speak with engine manufacturers in that regard.

Scrubbers – costs involved

As discussed, if a vessel is fitted with scrubbers, then their maintenance is the responsibility of the owners.

The cost involved in disposing waste from scrubbers is not expressly dealt with under the charter. However, even if owners need

to foot the bill in the first instance, it is suggested that these costs would likely be recoverable by way of an indemnity from charterers. The logic of this is that waste is created by following their orders i.e. to burn fuel with a higher sulphur content and to use scrubbers.



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Moving forward

Owners will want to give consideration to all of the above when entering into charterparties going forward.

In the future, bunkers should not be defined as 'high' or 'low' sulphur, but with reference to their sulphur content or as MARPOL Annex VI compliant. Appropriate consideration will need to be given to consumption warranties and prices on delivery and redelivery.

In the lead up to January 2020, owners will need to ensure appropriate measures are

in place to remove non-compliant fuel. If that fuel cannot be burned or removed prior to the cut-off date, then owners will face sanctions from states who are party to MARPOL.

Vessels with scrubbers fitted are likely to be at a commercial advantage in the short to medium term, although it cannot be said with any degree of certainty how long this will last. Much will depend on the oil industry's ability to respond to the technical issues faced in producing abundant quantities of compliant fuel.

Conclusion

As can be seen there are various issues which shipowners need to be thinking about, both in terms of existing charterparties and in charterparties entered into in the future.

If owners are in doubt about the provisions of any existing charterparties, or over what to include in future charterparties, we recommend that owners should seek further and more specific advice.

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