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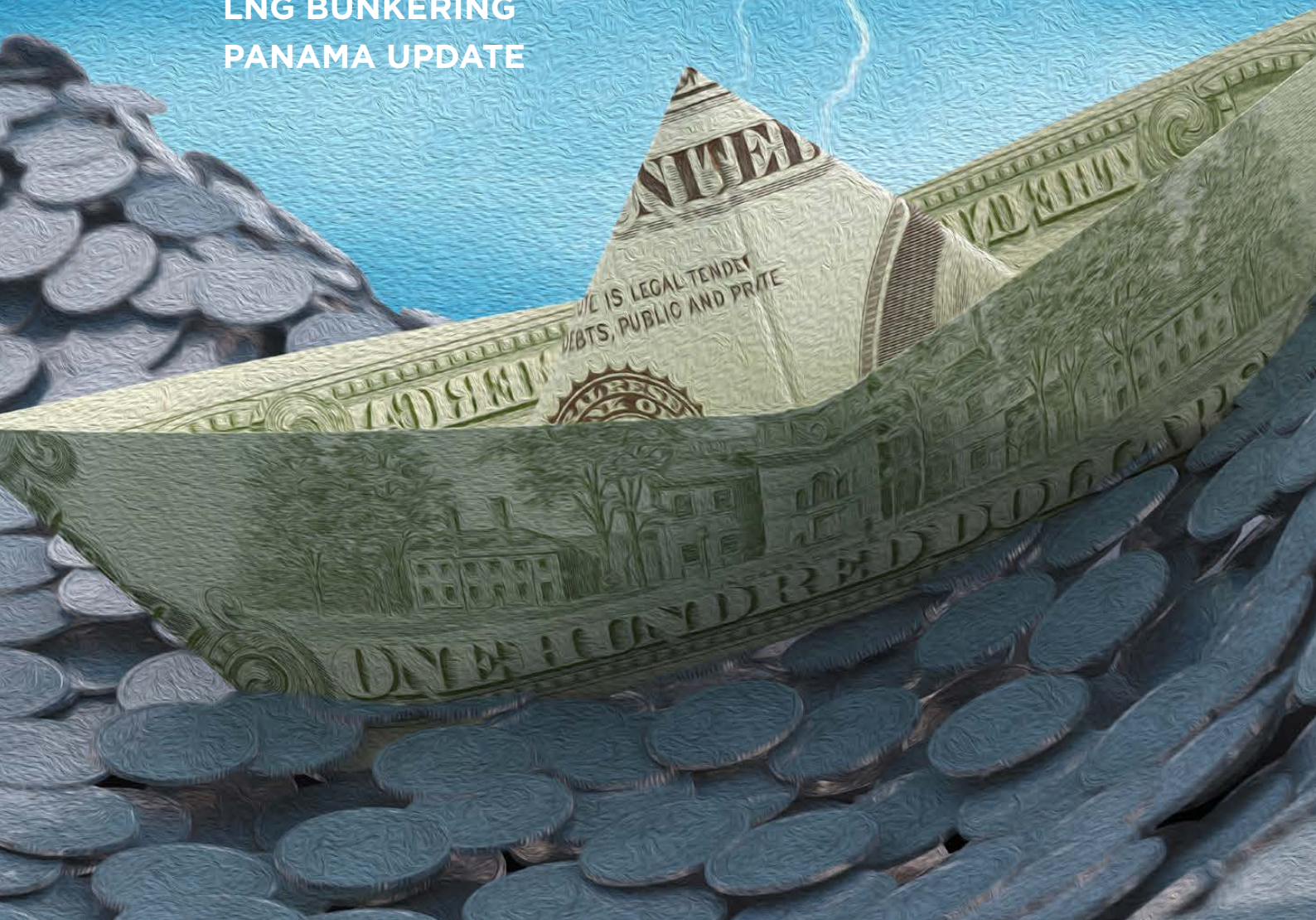
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PANAMA UPDATE



In the loop

Supplying HSFO to scrubber-equipped vessels is not necessarily an 'easy sell'. **Steve Simms** of Simms Showers takes a close look at the small print about scrubber use in maritime regulations and contracts

Between 2012 and 2020, marine scrubber installation increased by over 18,000%. By 2020, 4,047 vessels had scrubbers installed or on order. There were only 22 scrubber-equipped vessels in 2012.¹

Shipowners now have spent about \$6 billion to install scrubbers. BIMCO estimates that 20%-26% of the global fleet measured by tonnage uses scrubbers, and the International Energy Agency (IEA) estimates that by 2025 this will increase to about 30% of the world fleet tonnage, 5,000 vessels in total.² Based on the uptake of scrubbers since 2012, however, the IEA's estimate of scrubber installation looking toward 2025 is probably low.

With more vessels using scrubbers and even more expected to use them, there already is

increased regulatory and compliance focus on scrubber-equipped vessels. Increased scrubber use also raises issues for bunker suppliers and traders. Selling bunkers to scrubber-equipped vessels will bring bunker suppliers and traders under greater compliance focus. It will also raise issues between bunker suppliers and traders, and scrubber-equipped vessel owners and charterers.

As the maritime economy has its expected recovery from the 2020 COVID-19 downturn, increased demand for high sulphur fuel oil (HSFO) to achieve scrubbers' economies, and the growing number of scrubber-equipped vessels, may bring more disputes. Focusing on the standpoint of bunker

traders and suppliers, this article addresses possible dispute areas and how traders and suppliers may identify and prepare for them.

THE FIRST SCRUBBER INSTALLATION WAS SHIPBOARD

The first recorded scrubber installation was shipboard: in 1859 on the submarine *Ictíneo I* to remove carbon dioxide from the crew's air supply.³



For the next century, however, scrubber use was land-based, first, to produce sulphur from flue gas to produce sulphuric acid, then to remove sulphur from power station and factory flue gas. Similar scrubber uptake on vessels began in the 1960s as oil tankers first used scrubbers to produce inert gas to prevent oil cargo combustion.

1991 saw the first prototype shipboard scrubber to control exhaust gas emissions. The first comprehensive exhaust gas control, shipboard scrubber field trial was with the Canadian Icebreaker *Louis S. St-Laurant* in 1998 (a year after the passage of MARPOL Annex VI). Trials about that time aboard other vessels confirmed the 'equivalent' operation of wash water (open loop) scrubbers, and that scrubbers could be installed aboard and still maximise cargo space.⁴

Even though the technology then still was relatively untested, MARPOL Annex VI (to become effective in 2005) Regulation 14 in 1997 included exhaust gas cleaning systems – EGCS – 'scrubbers' – as an 'equivalent means' of reducing shipboard Sulphur Dioxide (SO_x) emissions.⁵ Not until 2008, three years after MARPOL Annex VI became effective, however, did the IMO further revise Regulation 14 to its current requirements for scrubbers.⁶

Then in 2008 came the further revisions to MARPOL VI requiring a 0.50% world-wide bunker sulphur content cap, effective 1 January 2020. Scrubber uptake still was relatively low.

Describing a maritime industry economy which sounds very much like today's, the Director of the Exhaust Gas Cleaning Systems Association (EGCSA) in 2012 writes (five years after the EGCSA' 2007 formation):

'Today further uncertainties prevail, including fleet over capacity in what appears to be a significant and sustained global downturn. The merchant marine business model that rode the peak freight rates and new-building tonnage has not served many ship-operators well. A shortage of free cash generation from operations and a withdrawal of finance by banks and other funders have placed a financial challenge on capital investment. The installation of ballast water systems, energy efficiency measures and emissions abatement technologies are all calling for significant investment in the existing fleet.'⁷

Four years later in 2012, however, out of 104,305 seagoing commercial ships in service in 2012,⁸ only 22 were equipped or on order with EGCS.⁹ The 4.50% parts per million (ppm) global bunker sulphur content limit had, however, on 1 January 2012 just been reduced to 3.50%. Although 1.00 % sulphur

content fuels were still permitted for use in Emission Control Areas (ECAs), the ECA limit was to decrease to 0.10% by 1 January 2015.

CLOSING IN

As 2015 and 2020 neared, and marine scrubber technology advanced, however, the marine industry began increasingly to consider scrubbers as a potentially effective means to comply with MARPOL VI sulphur content requirements.

Vessel owners, bunker traders and suppliers, and their banks asked:

- After 1 January 2020, would the price of higher sulphur content fuels be so low compared to Very Low Sulphur Fuel Oils (VLSFO) 0.50% or less that it made sense to invest in scrubber retrofits or to specify scrubbers for new buildings?
- Would that price differential continue so that investors profit over the approximately seven-year average life of a scrubber?
- Would the bunker price differential support the increased costs of scrubber maintenance, crew training, certification, compliance monitoring and reporting, consumption of fuel needed to operate the scrubber, and disposal of scrubber waste? Would it support the loss of revenue from off-hire time, needed to retrofit a scrubber?
- Assuming a compliantly-operating scrubber, those vessels would only need to carry cheaper HSFO. Could scrubber-equipped vessels avoid the challenges of fuel switch overs to Ultra Low Sulphur Fuel Oils (ULSFO – 0.10%) required in ECAs since 1 January 2015?
- Would scrubber technology improve and production quantity increase so that scrubbers would cost less to install than before?
- What type of scrubber was the best to install: open loop (depending on use of higher alkaline water, discharging wash directly into the ocean or waterways), closed loop (utilising chemicals aboard for scrubbing, requiring disposal ashore at certified facilities, and having some wash water discharge), or hybrid (combining open and closed loop systems)?
- Would scrubber-equipped vessels consuming HSFO avoid quality problems occurring with fuels blended to meet the 0.50% cap?
- Would bunker suppliers choose to stock their tanks and barges with HSFO, when they expected the demand for VLSFO (and profits) would be much higher? Would there be enough world-

wide HSFO supply to meet scrubber-equipped vessels' demand?

- Would banks support the credit lines needed for bunker traders, suppliers and their customers to buy the expected high priced VLSFO? Would smaller traders and suppliers unable to extend credit (or bear customers' non-payment) be forced from the VLSFO market, move to 'specialise' in lower priced HSFO, go out of business or merge with others?
- Would charterers and cargo-shipping customers be able to bear the increased costs of using VLSFO? Who would pay the expected, increased costs?

Leading up to the 0.50% sulphur global cap, increasing numbers of vessel owners considering those questions chose to invest in scrubbers. In the last part of 2018 and into 2019, the backlog for scrubber retrofits and new buildings had increased so that a number of vessel owners could not have scrubbers retrofitted or ready by the start of 2020.¹⁰

To date, 80% of scrubber installations to 2020 have been open loop, 18% closed loop and 2% hybrid.¹¹ The primary focus, including on uptake, but also of regulators, consequently has been, and apparently will be, on open loop scrubbers.

SCRUBBER INSTALLATION PACE AND DISPUTES

Then, however, came 2020 and COVID-19 brought (recalling the EGCSA Director's comments about 2012) 'significant and sustained global downturn'. In many marine markets there were no longer 'peak freight rates' but there was (as in 2012) '[a] shortage of free cash generation from operations and a withdrawal of finance by banks and other funders,' 'plac[ing] a financial challenge on capital investment.'

There also continues to be the drive, unabated by COVID-19, towards the 2030 and beyond IMO targets¹² for greenhouse gas emission reduction and elimination – and the recently-announced environmental 'scoring' system for vessels, so that now as in 2012, "[t]he installation of... energy efficiency measures and emissions abatement technologies are all calling for significant investment in the existing fleet.'

VLSFO prices, which initially had been high just before January 2020, fell so that the margin between VLSFO and HSFO was relatively small. Distillates became competitive with VLSFO blends. The combination of availability of relatively higher quality distillate fuel and lower demand so far appears to have made for few bunker quality disputes (including about sulphur content) for most of 2020

and probably at least for the near term thereafter. LNG, and to some extent other 'alternative fuels', have also increasingly become choices instead of scrubbers to achieve SOx reduction.

With this, the numbers of scrubber installations have also slowed because COVID-19 has made workers unavailable to do the installation.

With increased scrubber and HSFO use expected into 2020, P&I clubs also expected increased charterer-owner disputes about scrubber-equipped vessel operations.¹³ What would happen when a scrubber malfunctioned and the vessel emitted SOx outside MARPOL VI limits? Who is responsible if a scrubber breaks down, or to assure that there is enough compliant fuel aboard to power the vessel until the scrubber is repaired? Who is responsible if the scrubber impedes (or is claimed to impede) vessel speed or overly increases fuel consumption?

'With increased scrubber and HSFO use expected into 2020, P&I clubs also expected increased charterer-owner disputes about scrubber-equipped vessel operations'

Anticipating the disputes, in May last year BIMCO and INTERTANKO addressed the potential issues between charterers and owners in their detailed Joint Guidance Contractual Issues for Scrubber-Fitted Ships (23 May 2019), developed with the North of England P&I Club.¹⁴ The Joint Guidance includes discussion of bunker requirements for scrubbers, specifically that charters must provide fuel grades and specifications must be provided, anticipating that '[t]he sulphur content of high sulphur fuel oil produced and available may in fact rise after 2020 as demand drops and refiners can make savings in the production phase by exceeding 3.50% m/m.'

With the now noticeable number of marine scrubbers in use, open loop scrubbers in particular, but under some analyses closed loop scrubbers also, have received increasing criticism because of wash water discharge, which the analysis concludes contains pollutants, including polycyclic aromatic hydrocarbons (PAHs) and heavy metals, harmful to marine life.¹⁵

This will be a focus of upcoming IMO MEPC meetings into 2021, examining risk and impact assessment, delivery of scrubber residues, and focusing on individual state regulatory measures.¹⁶

As of September 2020, at least 30 countries had various prohibitions of open loop scrubber discharges in internal waters or territorial seas. California prohibits the use of any scrubber (whether open or closed loop) within 24 nautical miles of its shoreline.¹⁷ One recent (November 2020) note concluded as follows:

The IMO should consider prohibiting the use of scrubbers as a compliance option for newbuild ships and work to phase out scrubbers installed on existing ships. This is because we have found that using HFO with scrubbers is not equivalently effective at reducing air pollution compared to using lower sulphur fuels, such as MGO. Additionally, scrubbers of all kinds (open, closed, and hybrid) directly contribute to ocean acidification and water pollution, whereas lower sulphur fuels do not. Until then, we recommend that individual coun-

*tries, including Canada, take immediate actions to protect their air and waters from scrubber emissions and discharges. These actions could include one or both of the following: (1) an immediate prohibition on using scrubbers to comply with the Canadian portion of the North American ECA because they are not equivalently effective at reducing air pollution as ECA-compliant fuels; (2) an immediate prohibition on all scrubber discharges in Canadian ports, internal waters, and territorial seas because they contribute to acidification and water pollution that can negatively affect marine life.*¹⁸ This was after observing that: *Scrubbers can substantially reduce SO₂ emissions, with emissions from ships using 2.6% sulphur HFO with a scrubber averaging 31% lower than 0.07% sulphur MGO. We also found that scrubbers seem to somewhat reduce CO emissions (-11% on average), although the mechanism by which this occurs deserves further investigation.*¹⁹

Even with the introduction of new fuels, however, most expect that petroleum residuals and distillates will continue to meet most marine fuel demand for years to come. Looking back at 2020 and ahead into 2021, the expectation also is that the world econ-

omy generally and the marine market specifically will pick up essentially where they left off in 2019, immediately before and at implementation of the global sulphur cap.

In mid-2020, the international container liner market began to experience one of the most significant increases that it has had in rates and filled capacity, for years. Shipowner group BIMCO reports that by mid-2020, containerships with a total of 5.3 million twenty foot equivalent (TEU) container capacity were scrubber-fitted, with larger ships predominating among those installing scrubbers.²⁰ For many shipowners, particularly of larger vessels which consume greater amounts of fuel, scrubbers – even with the economic downturn of COVID-19, even with increasing environmental criticism about and restriction of waste water discharge – continue to be the SOx abatement approach of choice. The post-2020 emphasis now on CO₂ reduction also may support the choice, given that scrubber use results in fewer CO₂ emissions. A recent CE Delft study (August 2020) concluded that scrubber-equipped vessels using HSFO also contribute to fewer CO₂ emissions, because overall CO₂ emission between the vessels and HSFO production is lower than between the CO₂ emissions necessary to produce VLSFO and vessels consuming VLSFO.²¹

Consequently, as the maritime industry approaches 2030 and the world economy recovers from COVID-19, there will continue to be greater numbers of scrubber-equipped vessels, particularly larger ones, requiring HSFO bunkers.

With this greater scrubber and HSFO use, there will come more legal questions, between owners and charterers, bunker traders and suppliers and their charterer/owner customers, and between all and flag and port-State authorities.

HSFO SALES AND SCRUBBERS - IS RELYING ON WHAT THE BUYER SAYS ENOUGH?

MARPOL Annex VI, Regulation 18, paragraph 9 for example, continues to require '[p]arties undertake to ensure that appropriate authorities designated by them':

.2 require local suppliers to provide the bunker delivery note and sample as required by this regulation, certified by the fuel oil supplier that the fuel oil meets the requirements of regulations 14 and 18 of this Annex;

.4 take action as appropriate against fuel oil suppliers that have been found to deliver fuel oil that does not comply with that stated on the bunker delivery note;

.6 inform the Organization for transmission to Parties and Member States of the Organization of all cases where fuel oil suppliers have failed to meet the requirements specified in regulations 14 or 18 of this Annex.

From 1 January 2019, bunker suppliers' delivery notes for providing over 0.50% sulphur content bunkers, must provide a: declaration signed and certified by the fuel oil supplier's representative that the fuel oil supplied is in conformity with regulation 18.3 of [MARPOL Annex VI] and that the sulphur content of the fuel oil supplied does not exceed:

* * *

the purchaser's specified limit value of ____ (% m/m), as completed by the fuel oil supplier's representative and on the basis of the purchaser's notification that the fuel oil is intended to be used:

in combination with an equivalent means of compliance in accordance with regulation 4 of [MARPOL Annex VI]... .

Regulation 18.3 includes the requirement that the fuel contain no 'added substance or chemical waste' which 'adversely affects the performance of the machinery, or...contributes overall to additional air pollution'.

In 2019, The IMO provided its amply-named 'Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the Exhaust Gas Cleaning System (EGCS) fails to meet the provisions of the 2015 EGCS Guidelines (resolution MEPC.259(68))'.²² The 2019 Guidance requires that:

6. A system malfunction that cannot be rectified is regarded as an accidental breakdown. The ship should then change over to compliant fuel oil if the EGCS cannot be put back into a compliant condition within one hour. If the ship does not have compliant fuel oil or sufficient amount of compliant fuel oil on board, a proposed course of action, in order to bunker compliant fuel oil or carry out repair works, should be communicated to relevant authorities including the ship's administration, for their agreement.

* * *

12. Any EGCS malfunction that lasts more than one hour or repetitive malfunctions should be reported to the flag and port State's Administration along with an explanation of the steps the

ship operator is taking to address the failure. At their discretion, the flag and port State's Administration could take such information and other relevant circumstances into account to determine the appropriate action to take in the case of an EGCS malfunction, including not taking action.

Consequently, under the 2015 Guidelines, scrubber failure is a serious matter – that those operating the scrubber have only one hour to fix or face potential compliance action which under Resolution MEPC.321(74) (17 May 2019), 2019 Guidelines for Port State Control under MARPOL Annex VI, Chapter 3²³ can result in vessel detention.

Most reported scrubber failures have occurred because of problems with scrubber external support equipment, such as sensors, pumps, pipes and valves. How, though, is the supplier's representative to know and thus certify that the fuel has no additive that will not 'adversely affect' the scrubber? If the scrubber fails, of course, there also will be 'additional air pollution'.

Also, the 'supplier's representative' must be notified of the 'purchaser's specified limit value' to 'complete' the bunker delivery note and be 'notified' that the above 0.50% fuel is 'intended' to be used with a compliant scrubber. The supplier must accordingly have means to confirm notification of limit value, which the 'purchaser' could set at anything above 0.50%;

Unlike MARPOL Annex VI Regulation 14.2 for ULSFO or 14.1 VLSFO, MARPOL Annex VI, Regulation 4 gives no sulphur limit for HSFO used with compliant scrubbers. The same is true for ISO 8217:2012 and 2017. ISO 8217:2012 Annex C explains that:

The current edition of this International Standard... does not include limits for residual fuels... . Statutory requirements, i.e. the Revised MARPOL Annex VI... allow the adoption of technical solutions to ensure compliance with the emission regulations for sulphur oxides and particulate matter. Therefore, the sulphur content of both distillate and residual fuels is directly controlled by the statutory requirements.

Consequently, the purchaser's responsibility is to define the maximum sulphur content of the fuels in accordance with the ship's engine design, emission control equipment and the prevailing statutory limitations in the areas in which the fuel will be used.

The last ISO 8217 edition which specifies an HSFO/ residual fuel sulphur limit was ISO 8217:2005.²⁴

Consequently, unless there is a specific reference to ISO 8217:2015, charter parties for scrubber-equipped vessels therefore should

specify the maximum sulphur content of the fuel consumed with the scrubber – and – not simply specify that the HSFO is to be provided according to ISO 8217. If the fuel the charterer loads exceeds the limit value of the charter party, that could be a charter party breach even if the scrubber otherwise can treat the fuel to be Regulation 4 compliant. The fuel supplier could be in breach of its supply contract with the customer, and in violation of Regulation 18.

In 2020, a little over 50% of all marine fuel sold was VLSFO, while HSFO was about 8%.²⁵ MARPOL VI, Article 4, as noted above, has no limit on fuel sulphur content as long as a scrubber can process the fuel so that the SO_x exhaust output is compliant. With increasing numbers of scrubbers, there will be constant demand for HSFO. At the same time, expected economic recovery will increase the volume of VLSFO demand. VLSFO can be produced in two basic ways: by refining to eliminate sulphur or blending. With refining, the sulphur remains in the residual HSFO. Refining to produce more VLSFO will, with some refineries, produce residual with higher sulphur content. Testing of HSFO sulphur content consequently will remain important and quality disputes over sulphur content in HSFO could increase.

This situation also relates directly to bunker sulphur content testing for HSFO provided to scrubber-equipped vessels. That is, even customers using scrubbers must be careful to test within quality claims deadlines, and bunker suppliers be confident that the HSFO they provide to scrubber-equipped vessels tests within 'specified limit value'.

Many bunker sales now are conducted using the BIMCO 2018 Bunker Terms (BIMCO 2018 Terms). Those Terms' paragraph 6 ('Documentation') do provide that:

(a) Before commencement of delivery the Sellers shall present for written acknowledgement by the Master of the Vessel or the Master's authorised representative, a bunker pre-delivery form or similar document, duly signed by the Sellers or their representative, which shall contain... all information required in accordance with ISO 13739 or any subsequent amendments thereof, including, in particular, the values for... sulphur content... .

Actual use of such a pre-delivery document, however, is relatively rare in bunkering practice. The BIMCO 2018 Terms also state (paragraph 2, 'Specifications/Grades/Quality') that:

(a) The Buyers shall have the sole responsibility for the nomination of the specifications and grades of Marine Fuels fit for use by the Vessel.

(b) The Sellers warrant that the Marine Fuels... shall comply with the specifica-

tions and grades agreed between the parties and stated in the Confirmation Note. Unless otherwise agreed in the Confirmation Note, the Marine Fuels shall in all respects comply with the latest edition of ISO Standard 8217 as per the date of the Confirmation Note.

They state further (paragraph 11, 'Compliance with Laws and Regulations') that:

The Parties will not do or permit to be done anything which might cause any breach or infringement of the laws and regulations of the Flag State of the Vessel or the country of incorporation of the Sellers, or of the places where the Vessel or the Sellers trade or take Marine Fuels under the Contract.

As set out above, 30 countries have restrictions on scrubber wash water discharge and California bans any scrubber use within 24 nautical miles of its coastline. What if the bunker supplier becomes aware of an open loop scrubber-equipped vessel which is carrying only HSFO and is going to a port with a wash water discharge restriction? Can the supplier rely on the buyer's specification, or should the buyer refuse the sale?

Suppose the supplier knows that the vessel also has some ULSFO aboard. To comply both with the BIMCO 2018 Terms and MARPOL Regulation 18, para. 9.6 (requiring suppliers to meet the requirements specified in Regulations 14 or 18), should the supplier inquire whether the vessel has sufficient ULSFO to operate in an area, likely to be an ECA where there also is a wash water restriction (and the scrubber can't be used)?

MARPOL VI requires flag State authorities to report MARPOL VI violations on the Regulation 11.4 section of IMO's Global Integrated Shipping Information System (GISIS).²⁶

Recently, the Liberian flag State authorities addressed MARPOL VI violations by the *M/V Key Sonority*, a scrubber-equipped bulk carrier.²⁷ The vessel boiler was not connected to the vessel scrubber. For a number of months, the vessel nevertheless operated the boiler using the HSFO which the vessel used compliantly with its main propulsion system. The operation of the boiler with HSFO was a MARPOL VI Regulation 4 violation. The flag State authorities identified the root cause of the problem to be ineffective training of senior engineers. The vessel managers also added a caution note to the vessel's Technical Operation Manual, alerting that compliant fuel had to be used with combustion equipment not connected to the scrubber.

Apparently, the *M/V Key Sonority* did not have the compliant fuel aboard necessary to run its combustion equipment not connected to a scrubber. On loading HSFO, the

bunker supplier should have received the purchaser's notification that the purchaser intended to use the HSFO with a scrubber. Suppose the bunker supplier was aware that the vessel had multiple combustion systems, some of which were not connected to a scrubber. Do MARPOL VI and the BIMCO 2018 terms allow the bunker supplier nevertheless to accept the purchaser's notification?

Traders frequently are involved in bunkering the same vessels using suppliers across a number of ports. Traders become familiar with vessels' requirements; in fact one of the benefits bunker traders offer is that they are familiar with vessels' equipment and they can assist within planning bunker purchases because of their awareness of bunker availability and price.

Traders therefore are the ones, rather than vessel owners or charterers, communicating vessel requirements to suppliers, including limit values and intention to use fuel with a scrubber. Suppose the trader, observing a vessel's fuel consumption, becomes aware that the vessel will not have sufficient compliant fuel aboard, either to operate with its open loop scrubber in wash water restricted areas, or to operate shipboard combustion systems not connected with the scrubber. Can the trader still sell only HSFO to the purchaser? Should the supplier, selling to a trader, require confirmation that the vessel has sufficient types of fuel to operate compliantly?

SELLING TO ISO 8217 & MARPOL ANNEX VI COMPLIANCE

Marine fuel suppliers and traders almost always sell to the quality standards of the 2010, 2012 or 2017 versions of ISO 8217 ('Petroleum products — Fuels (class F) — Specifications of marine fuels'). ISO 8217:2017's Introduction states that:

It is the purchaser's and the user's responsibility to establish which statutory requirements are to be met and specify on that basis the corresponding maximum fuel sulphur content to the supplier.

At the same time, ISO 8217:2017 paragraph 5.2 requires that:

[t]he fuel shall be free from any material at a concentration that causes the fuel to be unacceptable for use in accordance with Clause 1 (i.e. material not at a concentration that is harmful to personnel, jeopardizes the safety of the ship, or adversely affects the performance of the machinery).

BIMCO Bunker Terms 2018 state that '[u]nless otherwise agreed in the Confirmation Note, the Marine Fuels shall in all respects comply with the latest edition of ISO Standard 8217 as per the date of the Confirmation Note.'

INTERTANKO has developed Scrubber Clauses for Time Charterparties,²⁸ which address issues of scrubber breakdown, including vessel off hire, disposal of scrubber waste and provision of compliant fuel if the scrubber breaks down, and also include the following:

2.1. Owners warrant that the Scrubber:

has been tested, certified, surveyed and verified as required in accordance with the 2015 Guidelines for Exhaust Gas Cleaning Systems (MEPC 259/68) and any subsequent amendment thereto (the '2015 Guidelines');

is capable of scrubbing fuel oil with a maximum sulphur content of [3.50% / maximum sulphur content warranted by the scrubber manufacturer – delete as appropriate] and will be maintained in a good and efficient state throughout the charter period.

2.2. Owners shall indemnify Charterers for any loss, liability, damage, fines, delay, cost or expense arising from or connected with Owners' failure to comply with the provisions of this Clause.

3.1. Charterers warrant that they will provide fuel oil:

with a maximum sulphur content of [3.50% / maximum sulphur content warranted by the scrubber manufacturer in the Scrubber Technical Manual – delete as appropriate] ('High Sulphur Fuel Oil'); in accordance with the specifications in the latest version of ISO 8217 as at the time of supply and/or any other specifications and grades contained elsewhere in this charterparty;

that is in all respects fit for purpose and suitable for burning in the main and auxiliary engines of the Vessel.

* * *

3.3. Where bunkers are supplied by Charterers in a place where MARPOL Annex VI is in force, Charterers warrant that any bunker suppliers shall be registered if required, and shall comply with Regulations 14 and 18 of MARPOL Annex VI, including the provisions relating to sampling and bunker delivery notes.

3.4. Charterers shall indemnify Owners for any loss, liability, damage, fines, delay, deviation, cost or expense arising from or connected to Charterers' failure to comply with the provisions of this Clause.

Consequently, under these INTERTANKO terms, charterers must indemnify owners for violations – and – charterers must require their suppliers comply with

MARPOL Annex VI Regulations 14 and 18.

As a part of Regulation 14 compliance, the IMO's most recent guidance on scrubber use generally and washwater discharge limits particularly is Resolution MEPC.259(68), (adopted on 15 May 2015), *2015 Guidelines for Exhaust Gas Cleaning Systems*.²⁹ These 2015 Guidelines (their section 10) give limits for washwater contents including pH, PAHs (Polycyclic Aromatic Hydrocarbons) and turbidity/suspended particle matter.

As noted above, the MEPC agenda includes a re-focus on these Guidelines, which have not changed in five years, in the upcoming MEPC sessions.

Bunker suppliers and traders must consider whether the HSFO they provide to scrubber-equipped vessels might cause the vessels to breach the Guidelines' limits.

Seawater, for example, generally is more alkaline, with an average pH of about 8.1.³⁰ For an open loop (wet) scrubber to provide 'equivalence' under MARPOL Annex IV, Regulation 4 and the *2015 Guidelines*, the alkalinity of seawater running through the scrubber system must neutralise the acidity of the exhaust gas SO_x so that the washwater discharge pH is 6.5 or greater. The higher the HSFO sulphur content, the more seawater that must be used to neutralise it, particularly in areas like the Bering Sea, where waters are more acid (with an average pH of about 7.7). Suppose a customer specifies only 8217:2017 quality but no limit value, or the HSFO provided otherwise has a higher sulphur content than the open loop scrubber can compliantly use in higher acidity waters? That HSFO provision would violate Regulation 14 and thus 18.

PAHs are toxic to human and marine mammal life. PAHs occur in un-burned oil ('petrogenic') and in oil which is not completely combusted (pyrogenic).³¹ Table 2 of the various (2010, 2012, 2017) versions of ISO 8217 list various limits for components of HSFO (a residual marine fuel). Table 2 places no limits, however, on PAH constituents present in HSFO.³² Even if the HSFO otherwise conforms both to ISO 8217 (whatever version) and conforms to the sulphur 'limit value' that the buyer provides, an HSFO provision which contains higher PAH components could still be non-compliant, and the fault could lie with the bunker supplier – who on its BDN, has certified that the provision is MARPOL VI compliant.

Open loop scrubber washwater turbidity (suspended particle matter) is a direct function of the HSFO content. ISO 8217:2017 Annex F (Ash) explains that:

[a]ll residual fuels contain some metallic species, either those that are naturally present from the crude oil feedstock used such

as vanadium, sodium, calcium and nickel, or those introduced primarily from external sources such as sodium, aluminium, silicon, potassium and iron. When a fuel is combusted, some of these metals are converted into solid particles of oxides, sulfates or more complex compounds, collectively known as ash.

ISO 8217 Table 2 contains limit values for ash and the heavy metal Vanadium, but has no limit value for Nickel, a heavy metal also frequently present in HSFO. Consequently, a supplier of HSFO with high Nickel content could also be providing ISO 8217-compliant fuel which still causes a MARPOL VI violation with excess turbidity. Suppliers also must be aware, as before, of the ash and Vanadium content of the HSFO bunkers they sell. Just as greater numbers of sulphur content disputes may occur with HSFO as refiners may refine with higher sulphur content, there may also be greater disputes over ash and Vanadium content, because of turbidity. If the MEPC's decision is to tighten the scrubber washwater content restrictions, those disputes could increase.

CUSTOMERS WITH SCRUBBERS ALSO NEED FOCUS

Bunker traders and suppliers may be tempted to consider the sale of HSFO to scrubber-equipped vessels an 'easy sell' which doesn't require much thought.

After all, the entire purpose of a scrubber-equipped vessel should be that it can compliantly consume almost anything, right?

Per ton, HSFO sales as the marine economy improves will pay relatively less per ton sold than more expensive VLSFO, with traders and suppliers making about the same profit margin on each ton sold; a 2% profit on \$600/ton VLSFO is going to be more than 2% \$100/ton on HSFO. HSFO also would seem to have fewer quality concerns than VLSFO, particularly the blends to meet the 0.50% limit.

Increased scrubber use by larger vessels, however, does and will require more suppliers' and traders' consideration than they may have thought. Given the larger, average size of the vessel using a scrubber, and the fact that it is likely (as a container carrier, for example) to be carrying expensive cargo on a tight call schedule, the consequences of a scrubber malfunction or detention because of problem HSFO fuel may be far greater than loss of a customer.

Consequently, including customers with scrubber-equipped vessels, bunker traders and suppliers should continue to know their customers and their vessels, the qualities of HSFO they sell, and the regulations, and charterer-owner relationships relating to that HSFO and the scrubber-equipped vessels using it.

1 Data from DNV GL Alternative Fuels Insight Platform, <https://www.dnvgl.com/services/alternative-fuels-insight-128171>, quoted in *Scrubbers on Ships: Time to Close the Open Loop (hole)*, International Council on Clean Transportation (ICCT), 18 June, 2020, <https://theicct.org/blog/staff/scrubbers-open-loop-hole-062020#:~:text=However%2C%20more%20than%204%2C000%20ships,or%20intend%20to%20use%20them>.

2 C. Paris, *Big Bets on Ship Exhaust Systems Cast a Cloud Over Vessel Owners*, Wall Street Journal, 30 Oct. 2020, <https://www.wsj.com/articles/big-bets-on-ship-exhaust-systems-cast-a-cloud-over-vessel-owners-11604052003>.

3 *Ictineo I*, https://en.wikipedia.org/wiki/Ict%C3%A9Dneo_I.

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5 Protocol of 1997 Relating to the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI, REGULATION 4 – Equivalents:

(1) The Administration may allow any fitting, material, appliance or apparatus to be fitted in a ship as an alternative to that required by this Annex if such fitting, material, appliance or apparatus is at least as effective as that required by this Annex.

(2) The Administration which allows a fitting, material, appliance or apparatus as an alternative to that required by this Annex shall communicate to the Organization for circulation to the Parties to the present Convention particulars thereof, for their information and appropriate action, if any.

6 Revised MARPOL Annex VI, October 10, 2008, Regulation 4, Equivalents.

(1) The Administration of a Party may allow any fitting, material, appliance or apparatus to be fitted in a ship or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Annex if such fitting, material, appliance or apparatus or other procedures, alternative fuel oils, or compliance methods are at least as effective in terms of emissions reductions as that required by this Annex, including any of the standards set forth in regulations 13 and 14.

(2) The Administration of a Party which allows a fitting, material, appliance or apparatus or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Annex shall communicate to the Organization for circulation to the Parties particulars thereof, for their information and appropriate action, if any.

(3) The Administration of a Party should take into account any relevant guidelines developed by the Organization pertaining to the equivalents provided for in this regulation.

(4) The Administration of a Party which allows the use of an equivalent as set forth in paragraph 1 of this regulation shall endeavour not to impair or damage its environment, human health, property, or resources or those of other States.

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23 Text at [https://www.wcdn.imo.org/localresources/en/OurWork/Environment/Documents/MEPC.321\(74\).pdf](https://www.wcdn.imo.org/localresources/en/OurWork/Environment/Documents/MEPC.321(74).pdf).

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(1) Parties shall co-operate in the detection of violations and the enforcement of the provisions of this Annex, using all appropriate and practicable measures of detection and environmental monitoring, adequate procedures for reporting and accumulation of evidence.

(4) Upon receiving such evidence, the Administration so informed shall investigate the matter, and may request the other Party to furnish further or better evidence of the alleged contravention. If the Administration is satisfied that sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, it shall cause such proceedings to be taken in accordance with its law as soon as possible. The Administration shall promptly inform the Party which has reported the alleged violation, as well as the Organization, of the action taken.

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