

# BUNKERSPOT

## FIRST IMPRESSIONS

MEETING IMO 2020'S CHALLENGES

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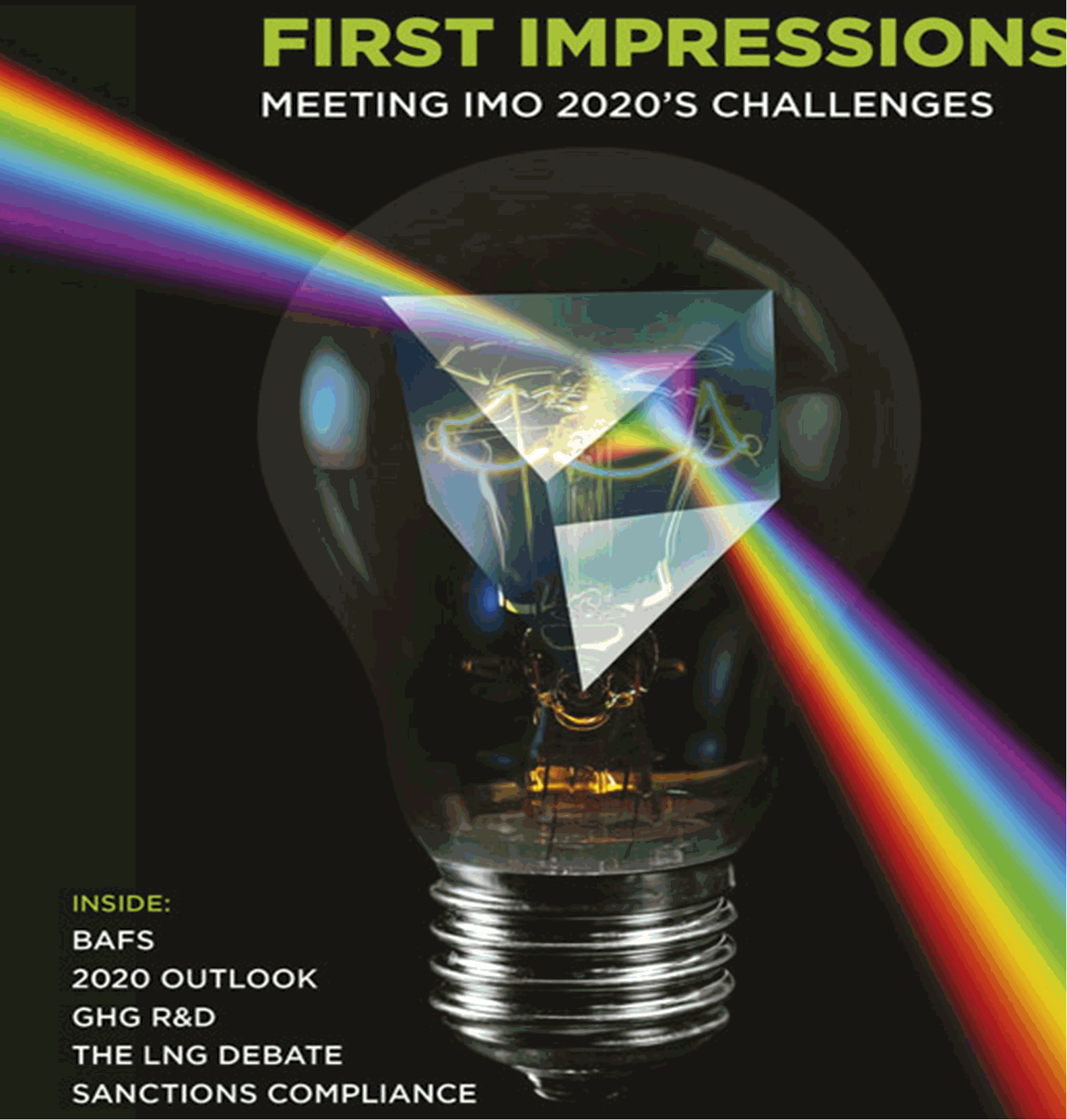
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# Transferable skills

As more LNG-fuelled vessels enter the global fleet, bunker traders and brokers must understand how marine LNG is bought, sold and delivered. **Steve Simms** of Simms Showers offers some useful guidelines for LNG sales terms and conditions

**2**030 is the new 2020. Carbon dioxide (CO<sub>2</sub>) is the new sulphur. LNG is the next frontier for bunker traders and brokers.

There are more ships running on LNG and more on the way. There are more LNG bunkering facilities and barges, and more are on the way at important bunkering locations. A business truth is that 'you get what you measure'. The measure for 2030 (and 2050) is CO<sub>2</sub> reduction. Currently, LNG presents the best, most cost-effective CO<sub>2</sub> emission-reducing marine fuel.

Most vessel owners, operators and

charterers who are already LNG 'adopters' buy LNG bunkers from suppliers through extended contracts. Given the increase in LNG bunker demand and availability, an increasing number of bunker traders and brokers have begun to enter, or are considering moving into, the LNG bunker market.

To sell LNG bunkers successfully and profitably, however, trader and broker sales contracts and operations must treat LNG as a unique product. This article presents some of the legal and contractual considerations for both traders and

brokers entering and then operating successfully in the LNG bunkering market.

## YOU GET WHAT YOU MEASURE\_\_

In August 2018, almost two years after the International Maritime Organization's (IMO) Marine Environment Protection Committee (MEPC) announced the 2020 0.50% maximum sulphur content bunker requirements,<sup>1</sup> the MEPC resolved 'to reduce CO<sub>2</sub> emissions per transport work, as an average across international shipping, by at least



40% by 2030, pursuing efforts towards 70% by 2050, compared to 2008.<sup>29</sup>

To meet 2020 0.50% sulphur content marine fuel requirements, the three main options are using very low sulphur fuel oil (VLSFO) (residual or distillates), install exhaust gas cleaning systems (EGCS), known as scrubbers, or use liquefied natural gas (LNG). Although some have called new VLSFO, 2020-compliant residual blends 'Frankenstein fuels', concerns over VLSFO price, availability, quality and compliance will likely run their course relatively quickly.

Most all marine fuels, however, will continue beyond 2050 to be hydrocarbon-based. It is one thing to reduce sulphur in hydrocarbon compounds, another to reduce their essential element, carbon.

Ten years ago, a typical bunker conference would have had one lone, late afternoon speaker talking to the few still in the room about 'alternative fuel' LNG bunkering. Now there are frequent conferences focused on LNG bunkering.

With both IMO and market encouragement, increasing numbers of vessel owners, operators and charterers are choosing LNG bunkers as the best, currently available means to not only to reduce CO<sub>2</sub> emissions but to achieve lower cost, more efficient (and profitable) operation. By 2030, an estimated 10% or more of the world fleet will be using, and demanding, LNG bunkers; by 2050, more than 20%.

Although the price of LNG currently varies more than 'conventional' bunkers depending on location, the more LNG becomes available by barging and shore-side delivery systems, the less price variation there will continue to be. By 2022, worldwide there will be 300% more LNG bunker vessels operating in the primary maritime bunkering hubs, including Singapore and Amsterdam-Rotterdam-Antwerp (ARA). Generally, LNG, even with the cost of liquefaction, costs 60% or more less per BTU delivered to a vessel than distillate/VLSFO. This price differential is likely to continue, even if, as predicted, VLSFO becomes less expensive. Estimates are that there is enough natural gas (methane) to supply the world for about 250 years, but only about a 43-year supply of the crude oil required to produce residuals and distillates. This relatively large gas source, even with increased marine fuel demand, should keep the costs per energy unit lower for LNG than for crude oil products.

Those building vessels now must also consider the likely regulatory environment over the next 20 or so years of the life of the vessel. If carbon taxes are levied on marine emissions, those vessels emitting less CO<sub>2</sub> will also cost less to operate, because of lower taxes imposed. Reduced CO<sub>2</sub> emissions also mean that vessel operators wanting to be 'green from a CO<sub>2</sub> footprint measurement will need to buy fewer carbon offsets if their vessels burn LNG.

should also encourage the development of less 'leaky' and more efficient LNG-fuelled vessel engines (just as the 2020 0.50% sulphur cap prompted ECGS development).

Consequently, measuring overall cost, LNG makes more sense to many vessel owners, and this presents an obvious opportunity for bunker traders and brokers.

## WHAT BUNKER TRADERS AND BROKERS CAN BRING TO THE LNG BUNKER MARKET

Broker and trader contracts to sell LNG bunkers may be like contracting for residual and distillate sales. For LNG just like other bunker sales, there always should be contract terms, including those governing payment, delivery time, governing law, quality and quantity measurement and times and other requirements to note disputes, insurance, dispute resolution, and enforcement (including maritime liens and arrest rights). There also should be clear terms addressing safety and sanctions compliance. LNG bunker contracts will still be formed by documented confirmations effectively incorporating sales terms and conditions, with the delivery confirmed by a bunker delivery note (BDN) followed by an invoice with agreed credit terms.

At present, there is no 'standard' or 'industry example' LNG bunker sales contract because most LNG bunker sales have been by producers using longer term, proprietary contract documents. BIMCO, Intertanko, Sea/LNG and other maritime organisations representing LNG bunker customers, producers, and also traders and brokers, are working on versions of LNG bunker sales terms and conditions better suited for spot LNG bunker sales. BIMCO's document, for example, is based substantially on the BIMCO Bunker Terms 2018, for residual and distillate bunkers.

Whether a bunker trader or broker selling LNG should use a 'standard' contract for their spot or other sales is a matter of individual preference. There are good legal and commercial reasons on both sides for standard or for traders' and brokers' own sales terms and conditions. However, given the relatively recent, wider sale of LNG bunkers, however, traders and brokers should consult experienced legal counsel even if they consider most of their long-used sales terms and conditions to be something they might want to use for LNG. LNG buyers, familiar with longer term contracts, may not be familiar with 'standard' bunkering contracts. New products also present opportunities to improve and update sales terms which may not have had recent review. LNG, too, is a different

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LNG is natural gas (mostly methane) liquefied by lowering its temperature below its approximately -162° Celsius (about -260° Fahrenheit) boiling point. LNG-burning marine engines emit approximately 25% less CO<sub>2</sub> than traditional bunker fuels, almost no particulate matter or black carbon and 85%-90% less nitrous oxide (NOx). LNG-fuelled engines generally require less maintenance (a criticism which has been directed against scrubbers) and LNG vessel fuel systems need less fuel treatment onboard. LNG bunkers also have fewer quality problems compared to residual bunkers.

LNG bunkers have come under recent criticism for potentially contributing to greater greenhouse gas (GHG) emissions, principally from methane leaking from the widely-used low-pressure dual fuel (LPDF), medium-speed, four-stroke marine engine. The greater tonnage entering world shipping utilising LNG bunkers, however, are deep-sea ocean vessels with large, slow-speed two-stroke engines which leak less methane. These newer, larger LNG-consuming vessels may bring the most CO<sub>2</sub> and overall GHG reductions.

Economic incentives to reduce CO<sub>2</sub> emissions moving toward 2030, and 2050,

product to distillates or residuals. Although some sales terms and conditions may be the same for all bunkers, LNG also requires some notably different sales terms and conditions.

Traders (and some brokers), hopefully utilising effective sales terms and conditions, however, should be able to offer credit lines that LNG suppliers may not want to offer, particularly as the number of their customers increases for direct sales.

Ten years ago, there may have been a question about whether the buyers or suppliers would lead the market. LNG buyers now will certainly make the market, just as residual bunker buyers did, beginning in the 1970s. Before then, just like much LNG is sold now, producers sold most residual bunkers through long-term contracts, extending minimal credit. The OPEC oil embargo caused producers to cancel their long-term contracts and this enabled the market entry of the first bunker traders. Traders, as they do now for residuals and distillates, bought from the producers and then sold on the spot market, extending longer credit periods and also often offering better pricing than the producers.

*'Just as refiners and other conventional bunker producers have preferred to deal with traders who buy relatively large quantities and then offer credit to their customers buying smaller quantities, so it should also be expected that LNG producers will also prefer to deal with large quantity-buying traders'*

Credit always has been important for vessel charterers; the more LNG-powered vessels there are, the more charterers there will be in the LNG bunker market needing credit. Just as refiners and other conventional bunker producers have preferred to deal with traders who buy relatively large quantities and then offer credit to their customers buying smaller quantities, so it should also be expected that LNG producers will also prefer to deal with large quantity-buying traders.

This may be particularly so as LNG producers become more aware of possibilities to sell profitably into the marine market. In the US and Canada, for example, public utilities and gas production companies have access to ample natural gas supplies. In the US, however, utilities and producers mostly store LNG in around 100 'peak shaving plants'. These

anticipate peak demand periods by storing natural gas as LNG. The LNG currently is liquefied by about 50 US facilities. When there is peak demand, the shaving plants gasify the LNG for pipeline transport to consumers. Purchasing from utilities and production companies operating peak shaving plants or even directly from those operating liquefying facilities, is as obvious an opportunity for bunker traders, as it was (at least pre-2020) buying residual or distillate from crude refiners. Just like the refiners, an LNG producer or utility is unlikely to have the maritime customer knowledge of a bunker trader or broker.

Effective traders and brokers (as with traditional bunkers) should, as the number of LNG-powered vessels and their trading area expands, be able to find the best price, quality and flexibility of supply for customers buying LNG. LNG (unlike traditional bunkers) supply to vessels is still to be a market priority for most LNG suppliers. The three ways to deliver LNG to vessels are truck to ship transfer (TTS), supply from a bunker vessel (ship-to-ship (STS)), and supply by shore tank and pipeline (shore tank-to-ship (TPS)). A

'hands on' process of bunker trading or brokering. LNG bunker buyers communicate via the system to give details to LNG sellers of the bunker quantity and delivery location needed. Suppliers compare this to their bunker delivery (including delivery vessel) schedule, with the procurement platform facilitating agreement with customers on price, quantity and delivery – and on delivery even (still distinct from most bunker deliveries) a digital bunker delivery note is produced with digital signatures.

This is an example of what LNG bunker brokers and traders may be able to introduce with the 'new' product of LNG, which customers used to buying (or traditional traders used to selling) residuals and distillates have resisted.

Safety continues to be a particular focus for LNG bunker supply. The IMO's 2016 International Code for Safety of Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code) is the established standard for LNG bunker provision. Bunker traders and brokers educated about the IGF Code and other sound LNG bunking procedures, as well as their customers' specific vessel requirements, can provide resources in addition to vessel owners' and charterers' resources to coordinate the LNG bunker delivery process safely and compliantly.

Along these same lines, in addition to being educated about the IGF Code (and of course having a copy on hand), LNG brokers and traders also should, generally, know their customers' vessels and also their suppliers' operations. ISO's Technical Specification 18683 (2015), 'Guidelines for systems and installations for supply of LNG as fuel to ships' – which includes in the annexes both a sample ship supplier and sample LNG delivery note (BDN) – is a further publication that traders and brokers selling LNG bunkers should know well, and own. It explains the reason for this:

*The properties, characteristics, and behaviour of LNG differ significantly from conventional marine fuels, such as heavy fuel oils and distillate fuels as marine diesel oil (MDO) or marine gas oil (MGO). For these reasons, it is essential that all LNG bunkering operations are undertaken with diligence and due attention is paid to prevent leakage of LNG liquid or vapour and to control all sources of ignition. Therefore, it is necessary that throughout the LNG bunkering chain, each element is carefully designed and has dedicated safety and operational procedures executed by trained personnel.*

Bunker traders and even brokers aware of maritime needs (and also with access to maritime insurance markets, through their other operations if they have been selling

other bunkers) also may be able to offer LNG bunker buyers access to product liability and related insurance, that non-maritime providers might not have the expertise to provide.

A further incentive for traders and brokers to enter the LNG market is that vessel owners and charterers increasingly will operate vessel fleets burning a range of bunkers, including LNG. The traders and brokers offering more of a 'one stop' bunkering source for these customers may be more likely to develop longer customer relationships, turning as much on overall service quality and expertise across bunker products, including LNG, as on price.

### LNG IS DIFFERENT – AND SO REQUIRES DIFFERENT SALES TERMS AND CONDITIONS, AND SALES AND DELIVERY PRACTICES

As ISO's Technical Specification 18683 (2015), quoted above, makes clear, traders and brokers must understand that LNG is different from 'conventional' bunker fuels.

First, LNG is really cold (not a technical term) and because of that LNG bunkers require skilled handling. Because of its low flashpoint, port authorities (and insurers) often do not permit simultaneous bunkering and cargo operations. Negligent handling can also lead to serious personnel injuries from cold temperature burns.

Second, even though the number of LNG bunker delivery modes and locations are increasing, they are still limited compared to delivery modes for residuals and distillates. Truck delivery, for example, may not be practical either for the size of vessel or for the locations of its calls.

Third, LNG bunkers may degrade because of cooling differences during the various transfers of LNG from initial producer to provision to a vessel. With heat, some LNG will boil off creating boil-off gas (BOG), which usually contains LNG's most volatile components (nitrogen and methane). The more BOGs, the more change in LNG composition and quality. This 'ageing' or 'weathering' is a gradual process but one unlike residuals or distillates, the majority of which do not degrade over time. Consequently, because of LNG's chemical nature, the quality measured at the point of purchase from a producer may be different from the delivered quality to the vessel. So, there must be an agreed means to measure the quality of the LNG at the vessel provision point.

This also is because LNG energy values vary depending on the LNG source. LNG is mostly methane (CH<sub>4</sub>). 'Lean' LNG (methane

greater than 95% of the total composition) has a relatively low calorific value; 'rich' LNG (methane less than 95% total composition) contains more heavier hydrocarbons which give it a higher calorific (and thus energy) value. So, all LNG is not the same.

At the same time there is at present no final, agreed ISO standard for LNG bunker fuel (as with ISO 8217 for residuals and distillates). ISO has been developing (for final vote at the end of February 2020), Draft Standard ISO/DIS 23306 'Specification of liquefied natural gas as a fuel for marine applications.' The Draft Standard begins by distinguishing LNG from 'standard' bunkers:

*LNG is produced in different locations in the world in liquefaction plants. Large scale production facilities are often dedicated to specific markets such as natural gas grids and large power plants that use their own standards. This document takes into consideration this major constraint for any adaptation to marine applications specificities/requirements.*

A further Draft Standard section explains that for LNG (unlike other bunker fuel): *It is not practical to require detailed chemical analysis for each delivery of fuels beyond the requirements listed in Table 1 or Table 2. Instead, a liquefaction plant, LNG terminal*

*'Because of LNG's chemical nature, the quality measured at the point of purchase from a producer may be different from the delivered quality to the vessel. So, there must be agreed means to measure the quality of the LNG at the vessel provision point'*

*or any other supply facility, including supply barges and truck deliveries, should have in place adequate quality assurance and management of change procedures to ensure that the resultant LNG is compliant with the requirements of this document.*

Any trader or broker entering the LNG market should buy a copy of the Draft Standard from ISO, read it thoroughly, follow its development and consider how to use it when accepting LNG bunker orders. The Draft Standard (and any final version of it) further makes clear the differences between LNG and other bunkers, including their derivation from other markets and dependence on quality assurance and management by others who may be, unlike for other bunkers, outside of the trader's or broker's customary contacts. If the trader or broker will be contracting (as customers will require) for a certain LNG bunker quality, the trader or broker therefore must commit to being familiar with the quality assurance and management of LNG bunker delivery, from the source of the supply carrying through to delivery to the vessel.

LNG brokers and traders therefore should be able to provide customers with product specifications meeting their requirements which confirm the bunkers' composition, combustion properties and density and that the LNG generally is suitable for bunkering the vessel. It is important to be aware that many LNG-importing countries, including for purposes of supply security, will have multiple supply sources. European LNG suppliers, for example, may source from 10 different gas fields. The result of this may be that there will be variations, depending on the supply added to existing LNG storage tanks.

This requires attention to LNG energy content at each point of custody transfer. British Thermal Units (BTU) or Kilojoules per hour (kJ/h) and Methane number (M) are the standard measures of LNG custody transfer, each defining fuel energy content. Consequently, LNG sales terms and conditions must have provisions for measuring quantity either by mass, or volume converting to mass, and measuring the LNG's Gross Calorific Value (GCV). LNG volume expands as gasification occurs, just like steam volume expands with boiling water except with a much smaller temperature variation. Consequently, LNG sales terms and conditions must include required responsibilities under the IGF Code and also detail the agreed means of measuring delivered LNG quality and quantity.

LNG bunkering also is different under MARPOL Annex VI, Regulation 18. Paragraph 4 of this Regulation states that:



... Paragraphs 5, 6, 7. 1, 7. 2, 8. 1, 8. 2, 9. 2, 9. 3, and 9. 4 of this regulation do not apply to gas fuels such as Liquefied Natural Gas . . . . The sulphur content of gas fuels delivered to a ship specifically for combustion purposes on board that ship shall be documented by the supplier.

So, for LNG bunker deliveries no BDN is required; for other bunker deliveries, under Regulation 18, paragraph 5:

*For each ship subject to regulations 5 and 6 of this Annex, details of fuel oil for combustion purposes delivered to and used on board shall be recorded by means of a bunker delivery note which shall contain at least the information specified in appendix V to this Annex.*

However, this is not to say that LNG bunker traders should not implement and require BDNs. In fact, the IGF code (in its Annex 1) and Draft Standard ISO23306 both require that an LNG BDN specify a methane number and lower calorific (heating) value of the delivered LNG, so according to those standards there must be a BDN for LNG deliveries. A well-designed BDN for LNG bunkering not only essentially documents agreed quality and quantity, but also can promote understanding of terms and conditions' quality and quantity measurement standards, listing the calculation standards for each. A BDN also should include documentation of LNG's sulphur content (which usually will be very low) as Regulation 18, paragraph 4 continues to require.

Another significant difference in LNG bunker deliveries is that there is no requirement to take or keep representative LNG bunker samples; for other bunkers, Regulation 18, paragraph 8. 1 requires that:

*The bunker delivery note shall be accompanied by a representative sample of the fuel oil delivered taking into account guidelines developed by the Organization. The sample is to be sealed and signed by the supplier's representative and the master or officer in charge of the bunker operation on completion of bunkering operations and retained under the ship's control until the fuel oil is substantially consumed, but in any case for a period of not less than 12 months from the time of delivery.*

Because of the variations in LNG quality and quantity delivered, as set out above, LNG bunker sales terms and conditions must contain some means to confirm, reliably and conclusively, LNG quality, in case after loading the vessel experiences problems with the LNG bunkers. Residual and

distillate bunker sales terms typically allow some period of days before there must be a quality claim report, although they usually require quantity claims to be reported at the time of delivery. Testing is available for LNG, however, which enables confirmation of LNG quality at the time of delivery.

LNG bunker traders' terms consequently should provide for quality confirmation by testing, ideally, immediately prior to bunker loading, or at least during loading. A further benefit of this is that immediate testing should eliminate claims that might arise from comingling of LNG bunkers loaded with existing bunkers.

LNG bunker contract sales terms and conditions also should make clear how sellers and buyers will address BOG during LNG bunkering operations. Terms should address what other services sellers (or buyers) will provide if the vessel is drydocked (both before and after drydocking), and how LNG bunkers are to be loaded and used if there is a situation of vessel commissioning (loading and using LNG for the first time) or sea trials. Gas freeing, purging, inerting, and cooling of LNG bunker tanks usually will require an LNG barge. Sales terms and conditions should define the responsibilities of seller and buyer in the case of such procedures, both in terms of technical cooperation and also payment and insurance responsibility.

Further distinct sales terms and conditions for LNG bunker sales include a requirement that buyers and sellers agree in writing the compatibility of the bunker delivery means and vessel receiving bunkers, on LNG transfer procedure, including cooling down or gassing up, transfer rates, volumes, emergency procedures, and completing and signing a check list specifying safety procedures and requirements. There also should be terms addressing leakage and responsibility for and prevention of leakage, specifications for gauging devices and their use and recording, and procedure for analysis, calculation and confirmation of LNG bunker quality and quantity.

Many of these terms, because of the distinct nature of LNG, will necessarily be more detailed than those sales terms and conditions for residual and distillate bunkers. Again, as the LNG bunkering market continues to develop, it is important for brokers and traders to be aware of the ISO and IMO standards applying to it. They should retain and use experienced legal counsel to assist with developing and implementing LNG bunker sales terms and conditions and the entire LNG sale and bunker delivery process.


The sales terms and conditions for LNG bunkers (as part of the overall bunkering

transaction) also necessarily will require much more interaction between the customer/buyer and their trader or broker, than a 'conventional' bunker sale. Each will need to know more about the capabilities and bunkering characteristics of the vessel, and delivery means, and be prepared to engage in advance of delivery for planning (including for safety procedures and understanding agreements about the means for measuring quality and quantity), than a 'conventional' bunker sale usually requires.

This again is where a bunker trader or broker can add distinct value to LNG bunker provisions. Effective LNG bunker provision, so that both buyer and seller achieve the economies, including safety, which led them respectively to choose to use LNG bunkers and to be involved in selling them, turns on having counterparties which are committed to knowing the necessary operations closely, and continually. As the LNG bunker market expands along with the number of LNG buyers, bunker traders and brokers can and should be able to meet their buyers' unique needs, just as they have with what have been considered 'conventional' bunkers.

1 Resolution MEPC.280(70) (Adopted on 28 October 2016), Effective Date of Implementation of the Fuel Oil Standard in Regulation 14.1.3 of MARPOL Annex VI

2 Resolution MEPC.304 (72) (adopted on 13 April 2018), Initial IMO Strategy on Reduction of GHG Emissions from Ships

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The opinions and recommendations of this article are his and not necessarily also those of SEA/LNG or IBIA, except if identified specifically as such.

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