



# PREDICTING THE **IMO** IMPACT

**Bevan Houston, Matrix PDM Engineering, USA**, makes four predictions on the implementation and impact of the International Maritime Organization's Marine Fuels Sulfur Content Regulation.

**A**s the implementation date for the International Maritime Organization's (IMO) Marine Fuels Sulfur Content regulations draws near, there is ample ongoing discussion about the role of refiners, how and whether

marine vessel operators will comply, and what the ramifications might be for non-compliance. While there is no crystal ball that can provide absolute clarity, this article will make four predictions about the potential impact of this new regulation.

The world shipping market consumes approximately 5 million bpd of refined products, two-thirds of which, after 1 January 2020, will no longer be allowed as fuel on unmodified ocean-going vessels because the sulfur content is too high.

A typical barrel of crude can range from 2% to 20% volume dedicated to refining resids, where IMO 2020 requires a global sulfur limit of 0.50% m/m (mass/mass) – a significant reduction from the current limit of 3.5%. The impact on the world's shipping and refining markets will be substantial.

### **Prediction number one: there will be no change in the date of implementation**

These regulations are going into effect on 1 January 2020 and there will be no adjustment. The response to various requests from regulatory bodies and industry consortiums to soften or delay the date have been rejected by the IMO.

While there will be no explicit change in the start date for the regulations, some have questioned whether all regulatory bodies will meet their IMO requirements for implementation. This would be an effective delay in the implementation by countries who simply choose to not begin enforcement. There have been reports that in the US, the White House is seeking to delay the implementation. In April 2019, 14 Republican senators sent President Trump a letter pushing for no delay in implementation, largely due to the strength of the US refining position in the global refined fuel market (particularly the lower sulfur grades required).

With this in mind, it is hard to believe that there will be any overt or effective delay in the implementation of these regulations.

### **Prediction number two: actual compliance will vary**

Once the regulations are in place, there are three ways to comply:

- On the ship – the addition of a scrubber on the engine exhaust or conversion of the vessel to an alternate fuel source.
- In the tank – convert fuel source from standard high sulfur marine fuel to lower sulfur marine fuel.
- Break the rules.

Your view on how the shipping industry and regulators behave will be directly proportional to how large the impact of these regulations will be.

First, these three options must be considered in more detail.

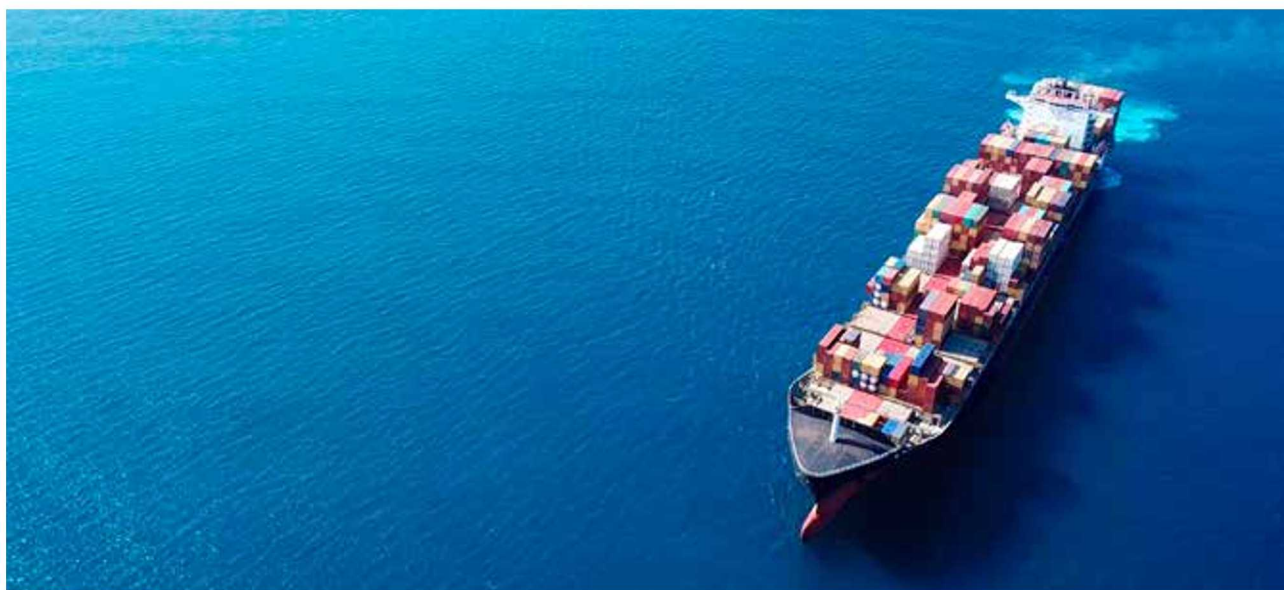
#### **Option one – solutions on the ship**

Scrubbing systems would allow the vessel to burn the existing fuel and have already been installed on approximately 5% of ships. These systems cost between US\$1 – 10 million to install. This number will not grow substantially, as all scrubbers which will be in place by the deadline have already been ordered and are in line for installation.

Even more complicated would be the reconfiguration of the ship's fuel source to a lower sulfur variant (LPG, LNG, others). While attractive for multiple reasons, this is even more complicated and is far more likely to be a regional solution, rather than an international vessel fuelling solution.

#### **Option two – in the tank**

The most straightforward method of compliance would be to simply utilise approved fuel. Some have theorised that ships will burn the lower sulfur fuel near ports and higher sulfur fuel during ocean transit. This, however, now seems less likely since the amendment last autumn by the IMO which would ban any vessel that is not outfitted with a scrubber to transport with high sulfur fuel in its tanks, regardless of whether it is being used. This amendment takes effect in March 2020, presumably to allow a reasonable period for ships to bring their holds into compliance.



**Figure 1.** With no delay to its implementation in sight, the shipping industry will have to adapt rapidly to IMO 2020.

### Option three – break the rules

It is important to note that the IMO has no direct regulatory authority. It is policed by member states which are signatories to this agreement.

That said, a Carnival Cruise Line captain was fined US\$114 000 by France for breaching the sulfur fuel limit on bunker fuel at the Port of Marseilles earlier this year, and Singapore has mentioned jail for the captains of vessels that are caught breaking regulations.

However, it is possible that shipping between two countries with no or lightly regulated environments would be free to use non-compliant fuel. Due to this, it is probable that actual compliance with the regulations will vary across the industry.

### Prediction number three: early implementation will be messy

Along with the decentralised regulation of these requirements, another open question will be how specific parts of implementation will work. This is the area with the most ambiguity and one vulnerable to disruption and issues.

Take, for instance, the very availability of compliant fuel as these vessels travel around the world. The regulations require that every attempt be made to secure compliant fuel, including paying a higher price. But what happens when there is no compliant fuel to be had at port?

For example, assume a vessel adds fuel in Port A, which only carries high sulfur marine fuel oil (HSMFO) and it fills its tanks and heads to Port B, where this vessel provides authorities with a fuel oil non-availability report (FONAR) to explain the nature of the fuel it currently holds.

This self-reporting FONAR addresses the question of compliance, but what about the function of compliance? Should this ship discharge its fuel at Port B and replace it with compliant fuel? The letter of the IMO regulations requires non-compliant fuel tanks to be drained and cleaned of any non-compliant fuel. If so, who pays for this commercial impact, and how is this HSMFO disposed of?

These are major functional questions, the answers to which are yet unclear just five months away from implementation of these regulations.

How much of the shipping industry will be working through these problems of compliance in the early days of implementation?

Fuel scarcity in some ports is not a dramatic prediction in light of these facts.

Since bringing fuel into compliance will not be achieved solely by desulfurisation, it will require refiners to blend fuels (likely distillates with the typical marine fuel resids). Keeping an eye on the stability of blended fuel oil will be one way to see how implementation is going. The lack of clear blended fuel product specifications, which are used and certified by engine designers, invites complications and issues. A variant of this was seen in 2018 with bunker fuel quality issues from various ports in the Americas, which led to shipping delays, engine breakdowns and insurance claims.

### Prediction number four: costs will go up – shippers (and customers) will pay, not refiners

This is a key point and one that can be lost when considering the approaches to bringing the fuel mix into compliance. Refiners will not be paying the bill for these upgrades. Scrubbers expected to be in operation in 2020 have already been ordered and installed. Will there be more? Time will tell.

There is no major rush of refinery projects underway to address requirements. There are plenty of large-scale projects in place for hydrotreating and de-asphalting, but it is difficult to make a direct tie between these projects (with their multi-year planning cycles) and this current regulation, whose impacts are still unclear.

It does seem clear that refinery demand rates will be pushed upward, particularly for coastal refineries.

It is also clear that shipping costs will go up in relation to this requirement. Shipping vendors have predicted cost impacts for fuel oil compliance to be between 5 and 10% of bunker fuel surcharges

Most forecasts indicate refinery utilisation rates will be positively impacted due to these regulations. Futures markets have already shown a clear differential on light to heavy now and into next year. How much further this will slip is an open question, and one that will also be open to the same general impacts of hydrocarbon markets.

High sulfur fuel oil (HSFO) will go down in value – where will these BTUs go? While not part of the scope of this article, there will be an impact. Some predict substitution into the power market.


Downward pressure on HSFO prices due to lack of viable outlets could theoretically spur scrubber installations, as the value gained by scrubbing will be greater.

Most solutions will require blending, which creates significant need for additional storage tanks and terminal infrastructure at ports, especially along the Gulf Coast.

### Summary

While the many potential impacts of IMO 2020 are contemplated, a few likely longer-term impacts are also worth consideration:

- As the demand for clean middle distillates increases, the spread between diesel and gasoline will likely grow.
- Abundant LNG – driven by US shale production – will make vessel conversion to LNG more viable.
- The Jones Act, a US Federal law that requires goods shipped between US ports to be transported on ships that are built, owned, and operated by US citizens or permanent residents, might make less sense in the wake of these market changes.

Predictions aside, with just five short months to go before the implementation of IMO 2020, one thing is crystal clear: much uncertainty remains about the potential impact of this new regulation on both refiners and marine vessel operators. 



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