

MARPOL Annex VI revision signals new low-emissions era

The IMO approved surprisingly far-reaching revisions to MARPOL Annex VI in April. But while industry stakeholders have welcomed clarity with regards to future ship emission standards, concerns remain about the practicalities.

There was a palpable sense of relief and a round of applause swept through the room towards the end of the 57th session of the Marine Environment Protection Committee (MEPC 57) of the International Maritime Organization (IMO) in April 2008. The applause came as a unanimous proposal for revising MARPOL Annex VI and the NOx Technical Code (Annex VI), hammered out by an IMO working group during that week, was approved without reservations.

Speaking at the close of MEPC 57, IMO Secretary-General Efthimios E. Mitropoulos said it "will certainly be one of IMO's finest hours" when the next MEPC, in October 2008, formally adopts the revised Annex VI. It will then enter into force in March 2010.

World Shipping Council (WSC), whose members represent over 90% of the global liner vessel capacity, expressed the feelings of many when it said the IMO had succeeded in achieving two very important results.

Firstly, the development of a new regime that will be environmentally effective, and, secondly, it had achieved this result "through an international regulatory regime, which will avoid the confusion, inconsistency and litigation that would result from different nations or local governments trying to regulate this issue."

The International Chamber of Commerce (ICC), the world business organization, also said it "acknowledges and supports" the amendments to the MARPOL Annex VI as it would deliver new standards that were global in scope.

agreed that the sulphur reductions would also address those.

Regional Issues

The EU had been sending unambiguous warnings that it would be ready to act alone on SOx emissions in 2009 if the MEPC failed to make a firm decision during 2008. Europe has already adopted legislation on sulphur content in marine fuels under Directive 1999/32/EC, which goes above and beyond the IMO's MARPOL Annex VI. The European Commission has been under pressure from the European Parliament and Council to tighten the regulation, but has been holding out for the IMO.

A source close to the EC told Bunkerworld at MEPC 57 that providing the revised Annex VI gains formal

provision in the existing regulation. Likewise, ARB's planned new main engine regulations would probably be a 'fuel rule' and not an emissions standard to avoid federal limitations on ARB's jurisdiction.

That means alternative compliance methods such as gas exhaust cleaning technology would not be an option in Californian waters under regional regulations.

Alternative Technologies

Exhaust gas cleaning systems (EGCS) and other alternative technologies or fuels to achieve the relevant emission reductions will be allowed under the revised Annex VI.

Moreover, the MEPC agreed, with a view to adoption by an MEPC resolution, draft revised guidelines for EGCS and interim washwater criteria for such systems, crucial elements in facilitating the use of scrubbers as an alternative to low-sulphur fuels. The washwater discharge criteria will be revised in the future as more data becomes available on the contents of the discharge and its potential effects on the environment.

This means that MARPOL Annex VI is not strictly speaking a commitment to a switch to distillate fuels when the global 0.50% limit enters into force, one of the most controversial points during the debate leading up to the revision. By allowing abatement technology as an option to achieve sulphur emission reductions comparable to the relevant fuel sulphur limits, the continued use of high sulphur bunker fuel would in theory be possible.

Assuming operation on 3.50% sulphur fuel, meeting a 0.10% sulphur limit would require 97% sulphur removal efficiency to comply with a 0.10% fuel sulphur cap. Makers of ship exhaust gas 'scrubbers' claim that is achievable.

Fuel Availability

A chief concern regarding the new accord is sufficient supply of low-sulphur fuel, hence the 2018 review clause regarding the switch to a 0.50% sulphur global limit. The final working group report to MEPC 57 included a statement from the International Petroleum Industry Environmental Conservation Association (IPIECA) cautioning that the oil industry did not expect there would be sufficient availability of shipping fuel at 0.10% and 0.50% sulphur in all regions by 2015 and 2020, respectively.

Linda K. Wright, Global Director at ExxonMobil Marine Fuels, speaking at the 29th International Bunker Conference (IBC) in April, also warned that there is no guarantee that sufficient low-sulphur

Exhaust gas cleaning systems (EGCS) and other alternative technologies or fuels to achieve the relevant emission reductions will be allowed under the revised Annex VI.

The agreement was the culmination of an arduous and often hostile debate that began as soon as Annex VI was implemented in 2005. Intense political pressure and the threat of more regional, national and even local unilateral action to cut emissions of noxious fumes from ships focused the minds of the MEPC delegates, helping to push through an agreement more far-reaching than many had expected.

Perhaps tellingly of just how profound the sulphur cuts are is the fact that it was enough to satisfy environmentalist Non-Governmental Organisations (NGOs) with consultative status at the IMO, represented by Friends of the Earth International (FOEI). Eelco Leemans from the North Sea Foundation, one of the organisations forming the FOEI delegation at the MEPC, told Bunkerworld that the long-term sulphur reduction goals agreed at the MEPC were good. But Leemans said they would have liked to see more done to limit nitrogen oxide (NOx) and particulate matter (PM) emissions from ships.

The proposed emission reduction regulation received instant recognition and support from a number of shipping organisations, hopeful that it would ward off further unilateral legislation. The

With the revision of Annex VI subject of fierce debate, it is to be expected that the outcome would not please everybody.

The most outspoken critics of the revised regulation have been on the supply side, in particular the refining industry. Many feel that intense political pressures to improve air quality prevailed over scientific justification for some of the agreed measures.

Major Sulphur Reductions

The revised Annex VI calls for a series of ambitious reductions of fuel sulphur content in the coming years that the IMO says would result in significant reductions of SOx (sulphur oxides) and PM (particulate matter) emissions from ships. The global sulphur cap will be reduced to 3.50% in January 2012, with a long-term global target of just 0.50% in 2020, subject to a review in 2018. If the 2018 review 'fails', the 0.50% sulphur cap may be deferred until no later than the start of 2025.

The measures also include progressively lower sulphur limits in what are now referred to as emission control areas (ECAs). In ECAs, sulphur limits are set to drop to 1.00% in March 2010 and to 0.10% in January 2015.

The revised Annex VI contains no specific limits set on PM emissions as it was

approval at the MEPC meeting in October, it would probably be enough satisfy European regulators, meaning future EU regulations will likely be likely be harmonised with the IMO convention.

Hopes are fading, however, that the revised Annex VI will be enough to satisfy regulators in the United States, and in particular in California. Wayne Natri from the US Environmental Protection Agency (EPA) told a bunker conferences at the end of April that even if Annex VI gets ratified in the US, opening the opportunity to create an ECA along the US west coast, it would probably not be soon enough for California to get to a significantly lower sulphur limit.

ECAs under the revised MARPOL Annex VI would have a sulphur limit of 1.00% from March 2010, dropping to 0.10% in January 2015. But the California Air Resources Board (ARB) will likely press ahead with a main engine fuel regulation which could see sulphur limits for all fuels used in Californian waters drop to 1.5-0.5% in 2009 and 0.1% in 2012.

ARB is also expected to tweak the language in its auxiliary engine fuel rules that came into force on January 1, 2007, in order to overcome a legal challenge to that regulation. It will therefore remove the Alternative Control of Emissions (ACE)

fuels will be available. Speaking from a supplier's and refiner's perspective, Wright reiterated oil industry misgivings about the significant refinery investment cost and CO₂ penalty associated with producing more low-sulphur fuels.

Looking at the implications of the new ECA limits, she said the drop from 1.50% sulphur to 1.00% in existing ECAs from 2010 was achievable without major refinery investments. If, however, more ECAs are introduced, she said supply of sufficient 1.00% sulphur fuel oil would become challenging.

The 2015 switch to 0.10% sulphur by 2015, meanwhile, is "a whole different story", and will be a big challenge, Wright noted. She said Europe would see a huge distillate shortfall that would have to be addressed either through imports or large, long range investments in refining capacity.

With regards to global sulphur limits, the drop to a 3.50% limit in 2012 is not seen as a major problem. But the proposed 2020 introduction of a 0.50% global sulphur cap is "an unprecedented single step change" in fuel requirements that it will signify a monumental challenge for the supply side, according to Wright.

A portion of the global fleet meeting the emission standard by using abatement technology might alleviate some of the pressure on the supply side, she suggested. Wright said the review in 2018 would be very useful to assess all aspects of shipping emissions and their effect on air qual-

ity and global warming from a scientific point of view.

The IMO working group paper states that a review "shall be completed by 2018 to determine the availability of fuel oil to comply with the fuel oil standard." In order to help inform the decision to be taken by the Parties at MEPC, the IMO "shall establish a group of experts, comprising of representatives with the appropriate expertise in the fuel oil market and appropriate maritime, environmental, scientific, and legal expertise, to conduct the review." Only the Parties, based on the information developed by the group of experts, may decide whether it is possible for ships to comply with the 2020 date, or if the standard should be deferred until January 1, 2025.

Cost Concerns

While the shipping industry has broadly welcomed the revised Annex VI, it has raised major concerns about the cost implications of the switch to low-sulphur fuels.

The Annex VI working group paper approved at MEPC 57 included a statement from the International Chamber of Shipping (ICS), warning that the new emission rules could cause disruption "to the balance in inter-modal competition and internal fuel markets." ICS Chairman, Spyros M Polemis, has called the shift to 0.10% sulphur fuels in ECAs "an unprecedented adjustment for the shipping industry" which would "probably result in sig-

nificant additional fuel costs."

There is also speculation that there could be a significant number of new ECAs in the future, thus increasing the areas with a 0.10% sulphur cap. It is estimated that some two-thirds of the global shipping fleet's movements are in coastal areas.

The shipping industry fears that as the cost of sea transport soars due to cleaner fuel requirements, it could lead to a modal shift away from shipping as it becomes less competitive in comparison to other transport modes. The industry has been quick to point out the irony of how this would be bad for global CO₂ emissions, as shipping is by far the most energy-efficient mode of transport available.

Sulphur Limits & Verification

MEPC 57 also approved Unified Interpretations with regards to "Sulphur Limits in Fuel and Fuel Oil Verification Procedure for MARPOL Annex VI", which the IMO says "should be applied from the date of approval and until the 2008 amendments to MARPOL Annex VI enter into force."

The Unified Interpretations represent a tightening of the sulphur limit interpretation, and could have implications for ship operators and bunker suppliers who have frequently clashed over sulphur specifications.

Firstly, sulphur limits currently stated as 4.5% globally and 1.5% in a sulphur

emission control area under regulation 14 of MARPOL Annex VI are to be interpreted with two decimal digits, 4.50% and 1.50% respectively. Secondly, a verification procedure has been agreed for those cases when a port state control officer (PSCO) decides to check a ship's MARPOL bunker sample to determine whether the fuel oil delivered to the ship is compliant with the required standards.

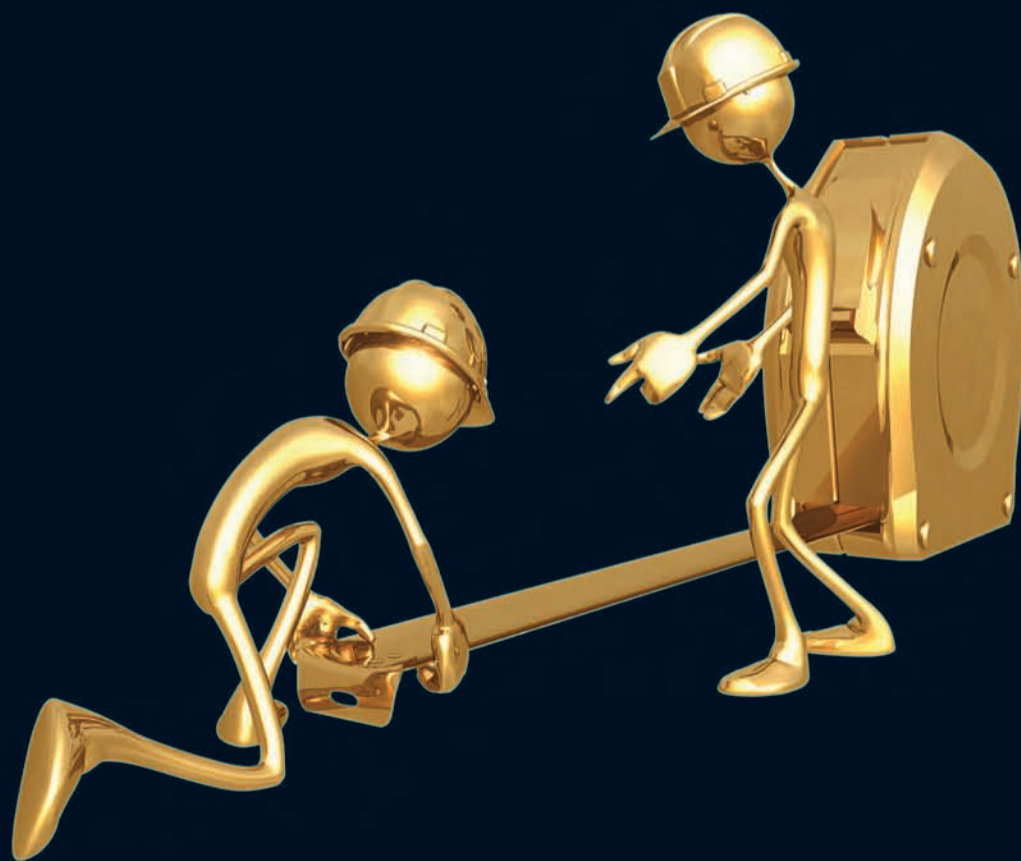
The Unified Interpretations means that ultimately, a final test result in accordance with the verification protocol of 1.51% sulphur would be considered as failing a 1.50% sulphur standard.

Traditionally, suppliers have aimed for a blend that is as close to 1.5% sulphur as possible to keep costs down. When it came to disputes about sulphur test results, the prevailing argument was to apply the repeatability (r) and Reproducibility (R) principles found in ISO standard 4259 when testing a fuel using test method ISO 8754:2003.

According to those principles, a fuel can be said to meet a 1.5% sulphur limit with '95% confidence' if a single test result falls within the ranges of 1.42% sulphur to 1.58% sulphur. The new two-digit interpretation combined with the strict sulphur verification protocol will require suppliers to blend LSFO to 1.42% sulphur to ensure they do not exceed the 1.50% sulphur limit with 95% confidence, according to Bob Thornton, Marine Technical Director at World Fuel Services. He told IBC in April that a 1.42% sulphur blending target, as

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ANNEX VI SPECIAL REPORT

opposed to 1.5%, would add significantly to the blending costs.

Non-compliance Clause

The revision of MARPOL Annex VI includes a clause to prevent ships from being penalised for fuel quality non-compliance outside their control in connection with Regulation 18. This regulation covers issues related to fuel quality, sampling and delivery requirements, and while in theory the responsibility lies with the supplier to comply with this regulation, in practice, enforcement agencies will be looking to ships to verify their compliance.

The 'get out of jail free card' is a fuel availability provision under Regulation 18 that outlines what actions are appropriate should a ship be unable to obtain the fuel necessary to comply with a given requirement under Regulation 14, in other words low sulphur fuel. If a ship is found by a Party not to be in compliance with the relevant fuel standards, the ship should provide documentation proving that it could not get hold of compliant fuel despite best efforts.

The clause states that a ship "should not be required to deviate from its intended voyage or to delay unduly the voyage in order to achieve compliance." Ships are required to "notify its Administration and the competent authority of the relevant port of destination when it cannot purchase compliant fuel oil."

In the same spirit, the onus is on the supplier to certify that bunkers delivered to a ship meets the requirements of

Regulations 14 and 18, to be stated on the bunker delivery note. Parties to MARPOL Annex VI should maintain a register of local fuel oil suppliers, who are required to provide the bunker delivery note and sample as required by Regulation 18.

Parties to the regulation are also requested to "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" and to "inform the Organization for transmission to Parties of all cases where fuel oil suppliers have failed to meet the requirements specified in Regulations 14 or 18 of this Annex."

In connection with port state inspections carried out by Parties, they are also called upon to "inform the Party or non-Party under whose jurisdiction a bunker delivery note was issued of cases of delivery of non-compliant fuel oil."

Fuel Quality

There has been pressure from some delegations to the MEPC to introduce an IMO fuel quality regulation under Annex VI. Among the key elements achieved at MEPC 57 was an agreement not to pursue an IMO fuel quality standard for now, but instead invite the International Standards Organization (ISO) to revise the ISO 8217 fuel standard in line with the needs of Annex VI.

The IMO would like ISO to consider the development of a fuel oil specification addressing air quality, ship safety, engine

performance and crew health, with recommendations for future consideration by IMO and, if feasible, to report back to the MEPC at its 58th session in October.

The ISO has been invited to review a specific list of fuel characteristics, and to offer their recommendation on appropriate parameters and limit values. The ISO has also been asked to provide recommendations to IMO on whether any characteristics should be removed or added to the list of appropriate parameters; provide recommendations on the limits for these characteristic and advise to what extent these could be taken into account in any revision of the ISO standard.

MEPC will continue to focus on fuel oil quality when ISO reports back.

ECAs

The revised Annex VI has replaced the term Sulphur Emission Control Area (SECA) with Emission Control Area (ECA). It will allow for the designation of new ECAs specifying limits not just for SOx, but also for PM and NOx, or all three types of emissions from ships.

New ECAs can be established subject to a proposal from a Party or Parties to the Annex which would be considered for adoption by the IMO, if supported by a demonstrated need to prevent, reduce and control one or all three of those emissions from ships.

During MEPC 57, France, supported by several other delegations, advocated that the criteria for designating ECAs should

be relaxed, whereas some voiced concern about significant changes to the criteria. The working group did not find enough time to discuss this matter, but suggested that parties interested in relaxing the current criteria should submit a proposal for consideration at MEPC 58.

A Road Map

The revision of Annex VI is a landmark achievement that has put in place a long-term predictable framework for the global shipping, refining, marine fuels and related industries.

Stakeholders have been particularly keen to stress that the IMO agreement ensures a global solution to harmful ship emissions, which also offers regional protection by establishing ECAs, which should make initiatives outside the IMO unnecessary.

But there are still doubts about whether the US, and California in particular, will align its shipping emission regulations with the IMO.

As seen above, there are also legitimate concerns about the cost implications of increasing demand for low-sulphur fuels, and supply.

The IMO has no mandate over the refining industry which is under pressure to meet increasing demand for fuels that satisfy future standards.

There are clear goals in place, but how the affected industries set about achieving those goals remains to be seen. ■

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