IMO
INTERNATIONAL MARITIME LAW INSTITUTE
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MERCHANT SHIPPING (PREVENTION OF AIR POLLUTION) REGULATIONS

ON THE RULES TO INCORPORATE ANNEX VI OF INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS (MARPOL) 1973

as modified by the protocol of 1997 into the law of Malaysia and to provide for its effective implementation thereof

A Legislation Drafting Project submitted in partial fulfilment of the requirements for the award of the Degree of Master of Humanities (M. Hum) in International Maritime Legislation at the IMO International Maritime Law Institute.

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1. INTRODUCTION

1.1 The Explanatory Note

This explanatory note is related to the draft of the Merchant Shipping (Prevention of Air Pollution) Rules (hereinafter referred to as Draft) to incorporate the Annex VI of International Convention for the Prevention of Pollution from Ships (MARPOL) 1973, as modified by the Protocol of 1997, into the law of Malaysia, and to provide for its effective implementation thereof. The explanatory note has been prepared in order to assist the reader of the Draft and to assist early enlightenment on it. It does not become mandatory portion of the Draft and has neither been endorsed by the Ministry of Transport nor the Attorney-General Chambers. However, the statement in this explanatory note is highly recommended to be read in conjunction with the Draft although it is not a complete characterization of the Draft. This explanatory note and the suggested provisions for the Draft are not intended to act as the authoritative guide to the meaning of such provision.

1.2 Air Pollution & Climate Change

Air pollution is not a stranger thing nowadays. The earth gets warmer and more crowded, the mechanical engines continue blowing off nasty emissions, and half the world has no access to clean fuels or technologies. Nine out of ten people now breathe polluted air, which kills 7 million people every year.[1] Well-known causal factor of air pollution is bad gases. It either directly disrupts the normal air atmospheric formulation and transform the breathable air into an unhealthy one, or forms the greenhouse effect that can cause climate change. The basic science of climate change is when some bad gases are trapped in the atmosphere and reradiate it back toward the surface of the earth, then it increases surface temperature, causing the both the surface and the atmosphere to heat up.[2]

Although the climate change topic is an open field of argumentation particularly on climate change aspect, it is proven that the greenhouse gas (GHG) effect does change the nature of our atmosphere. Rises in atmospheric concentrations of carbon dioxide, methane and other

[1] World Health Organization, '*Annual Statistical Report'* (2012).

[2] Jennifer A Dunne, Stacy C Jackson and John Harte, 'Greenhouse Effect' (2013) Encyclopedia of Biodiversity: Second Edition 18.

greenhouse gases may slowly but consistently warm the atmosphere. There is also virtuous evidence that our earth's atmosphere has warmed over the past 150 years and that some of that warming is likely due to human emissions of various gases from various human activities.[3] Human activities are major sources of outdoor air pollution including motor vehicles combustion, power generation, industrial facilities, waste and incineration, and residential heating.[4] Shipping activities are directly connected to ship's power combustion and incineration.

Shipping is the essence of global trade and never before have so many container ships, oil tankers, and even recreational cruise ships, persisted across our world's oceans. However, their bunker-fuel-propelled engines, generators, and refrigerants may emit Carbon Dioxide (CO2) into the atmosphere, and perhaps worse, toxic Sulphur Oxides (SOx), particle matters (PM) such as Ozone-Depleting Substances (ODS) and Volatile Organic Compounds (VOC), and Nitrogen Oxides (NOx).

In brief, the main contributor to greenhouse gas emissions from shipping is CO2, which is formed from the combustion of the carbon in the fuel used for propulsion and from energy and heat production on ships. Therefore, CO2 emissions are directly connected to a ship's fuel consumption.[5] At the global level, carbon dioxide is the most significant trace constituent that has an effect on global climate change, and shipping is one of the contributors to the world's total CO2 emissions: 870 CO2 million tonnes in 2007.[6] It is increasing by a factor of between 2.2 and 3.3 in 2050 according to International Maritime Organization (IMO) GHG Report 2009.[7]

PM are inhalable and respirable particles composed of sulphate, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water. The PM from VOC and ODS will be the focus subjects on this Draft in related to MARPOL Annex VI requirement. Commonly,

[3] Julian Morris, 'The Paris Agreement : An Assessment', Reason Foundation Policy Brief (2016).

[4] World Health Organization, 'Ambient Air Pollution: Pollutants' <www.who.int/airpollution/ambient/en/> accessed 12 February 2019.

[5] Karin Andersson and Selma Brynolf, *Shipping and the Environment - Improving Environmental Performance in Marine Transportation* (Springer International Publishing 2016) 160.

[6] Apollonia Miola and others, 'Regulating Air Emissions from Ships The State of the Art on Methodologies , Technologies and Policy Options' (2010) 14.

[7] Ibid.

VOC can exist in a gas or a very volatile liquid state produced by the organic chemicals which is carbon-based at the ordinary room temperature/pressure.[8] Whereas, ODS such as chloroflurocarbons (CFCs) and hydroflurochlorocarbons (HCFCs), have traditionally been used as refrigerants in all types of refrigeration plants on merchant vessels, play a vital role in storing provisions and providing air conditioning.[9] Sources of PM include combustion engines (both diesel and petrol), solid-fuel (coal, lignite, heavy oil and biomass) combustion for energy production in households and industry, as well as other industrial activities (building, mining, manufacture of cement, ceramic and bricks, and smelting).[10]

In general, SOx emissions are primarily associated with relatively high sulphur contents in fossil fuels.[11] The sulphur contents in the heavy fuel oils (HFO) consumed by ships are higher than original crude oil due to the sulphur augmented heaviest fractions while on the refining process.[12] The sulphur content HFO depends on the sulphur content of the crude oil, which varies in different regions of the world.[13] It is solely the lack of exhaust gas cleaning system which cause the amount of SOx emissions from ships truly depended on fuel's sulphur contents.[14]

NOx in the ambient air consist primarily of nitric oxide (NO) and nitrogen dioxide (NO_2); these two forms of gaseous nitrogen oxides are significant pollutants of the lower atmosphere.[15] The major source of anthropogenic emissions of NOx into the atmosphere is the combustion of fossil fuels in stationary sources (heating, power generation) and in the internal combustion

[8] 'Know Thy Enemy: Volatile Organic Compound' (*Custom Machine Manufacturing*) <www.thecmmgroup.com/know-thy-enemy-volatile-organic-compounds/> accessed 16 February 2019.

[9] Andersson and Brynolf (n 5) 213.

[10] Ibid.

[11] Vestreng, V., Myhre, G., Fagerli, H., Reis, S. & Tarrasón, L., 'Twenty-five years of continuous sulphur dioxide emission reduction in Europe. Atmospheric Chemistry and Physics' (2007) 3663 - 3681.

[12] Andersson and Brynolf (n 5) 187.

[13] IMO, 'Document MEPC 68/3/2, "Air Pollution and Energy Efficiency" noted by Secretariat on 9 February 2015'.

[14] James J. Corbett & Paul Fischbeck, 'Emissions from Ships', Science, AAAS, (1997) 278-5339, 823-824.

[15] World Bank Group, 'Nitrogen Oxides' (1998) <www.ifc.org/wps/wcm/connect/1304c9804885560bb91cfb6a6515bb18/HandbookNitrogenOxides.pdf?MOD=AJPERES> accessed 15 February 2019.

engines.[16] Nitrogen dioxide is not only an important air pollutant by itself, but also reacts in the atmosphere to form ozone (O_3) and acid rain.[17]

IMO successfully breaks down the environmental requirement of ship emissions, through the adoption of MARPOL specifically Annex VI. IMO has guided Member States through Regional Maritime Technology Coordination Centre (MTCC) which offer technical assistance for the improvement of efficiency and reduce emissions significantly.

2. THE MARPOL ANNEX VI

This section will explain the general background of MARPOL including the associated annexes. Correspondingly, it will later explain the main features of MARPOL Annex VI, the linked air pollutant matters under its chapters, and the objective of what is required by the IMO towards the contracting governments.

2.1 Background of the MARPOL 1973

The pioneer international treaty that ventured in sea protection from pollution was the International Convention for the Prevention of Pollution from Oil 1954 (OILPOL). It was the foundation of what MARPOL has successfully emerged as of today. Eventually, OILPOL only relates to pollution caused by tankers during their routine operations such as the washing of cargo tanks and dumping of resultant oily water in the ocean. OILPOL regulated the amount of oily water which could be discharged in the oceans, the places it could be dumped, and encouraged the Parties to install reception facilities where oily water could be discharged.[18] After the ship-source pollution which had been acknowledged afterwards, the majority of OILPOL substances were incorporated as the first Annex of MARPOL 1973 that convened

[16] WHO Regional Office for Europe, 'Nitrogen Dioxide' (2000) <www.euro.who.int/__data/assets/pdf_file/0017/123083/AQG2ndEd_7_1nitrogendioxide.pdf> accessed 15 February 2019.

[17] United States Environmental Protection Agency, 'Nitrogen Oxides (NOx), Why and How They Are Controlled' (1999).

[18] Malgosia Fitzmaurice, 'The International Convention for The Prevention of Pollution From Ships' in David Joseph Attard et al. (eds), *The IMLI Manual on International Maritime Law (Volume III) - Marine Enviromental Law and Maritime Security Law* (Oxford University Press 2016) 34.

between 8 October to 2 November 1973 in London. After the tragedy of the oil tanker, Torrey Canyon, in 1967 which ran aground while entering English Channel and spilled 120,000 tons of crude oil into the sea, the IMO[19] realized the importance of protecting the sea from pollution is a major mandate to ensure the ocean's cleanliness and living organism's health matters.

MARPOL includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently contains six technical Annexes. MARPOL covers prevention of pollution of the marine environment by ships from operational or accidental, causes Special Areas with strict controls on operational discharges are included in most Annexes. As the MARPOL had not yet entered into force, the 1978 MARPOL Protocol absorbed the parent Convention. The combined instruments entered into force on 2 October 1983.

Briefly, both Annex I (regulation for the prevention of pollution by oil), and Annex II (regulation for the control of pollution noxious liquid in substances in bulk) of MARPOL entered into force in the year 1983. Annex III tackled harmful substances carried by sea in packaged form entered into force in 1992. The requirements to control sewage is in Annex IV, in force 27 September 2003. Furthermore, the deals with different types of garbage featured in the Annex V, which entered into force 31 December 1988.

In 1997, a new Annex was added to the MARPOL. The regulations for the Prevention of Air Pollution from Ships (Annex VI) seek to minimize airborne emissions from ships and their contribution to local and global air pollution and environmental problems. Annex VI entered into force on 19 May 2005 and a revised Annex VI with significantly tightened emissions limits was adopted in October 2008 which entered into force on 1 July 2010.[20] Malaysia has ratified the Protocol of 1978 in relating to MARPOL as amended for Annex I, II

[19] During the Geneva Conference in 1948, the IMO Convention was established with the name of Inter-Governmental Maritime Consultative Organization (IMCO) and later changed to International Maritime Organization in 1982.

[20] 'International Convention for the Prevention of Pollution from Ships (MARPOL)' <www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx> accessed 1 January 2019.

and V on 1st of May 1997, while Annex III on 27 December 2010 and Annex VI on 27 September 2010.[21]

2.2 Main features of Annex VI, MARPOL 1973

This Annex generally shall apply to all ships engaged in international voyage except to government and war ships, and pleasure crafts which have gross tonnage of 400 and above.[22] However, certain regulation under the Annex shall only apply to certain degree of tonnage and engine capacity which will be explained further in this Draft. In contrast, any emission necessary to save life or safety of a ship, or resulting ship or equipment damage, are exempted. Other exceptions are on ship emission reduction trial and of for the purpose of research, and any emission from sea-bed mineral activities.[23]

Chapter 2 of this Annex merely mentioned about inspection, certification and survey. Standard 5-years validity of IMO harmonized certification[24] applied to the issuance of International Air Pollution Prevention Certificate to cover Chapter 3 compliance.[25] Other important certificates of Chapter 4 of this Annex are International Energy Efficiency Certificate (no strict validity date but depend on the company/ship/flag change or modification) and Statement of Compliance for Fuel Oil Consumption Reporting (validity up to one calendar year).[26]

Annex VI sets limits on SOx and NOx emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances.[27] Annex VI includes a global cap of 4.5% m/m on the sulphur content of fuel oil and calls on IMO to monitor the worldwide average sulphur content of fuel. It contains provisions allowing for special SOx Emission Control Areas (SECAs) to be established with more stringent controls on sulphur emissions. In these areas,

[21] Ibid.

[22] MARPOL Annex VI, Chapter 1, Regulation 1.

[23] Ibid., Regulation 3.

[24] IMO Resolution A.1053 (27), 'Survey Guidelines under The Harmonized System of Survey and Certification (HSSC)', adopted on 30 November 2011.

[25] MARPOL Annex VI, Chapter 2, Regulation 5.

[26] Ibid., Regulation 6.

[27] Ibid., Chapter 4, Regulation 14.

the sulphur content of fuel oil used on board ships must not exceed 1.5% m/m.[28] Further, ships must fit an exhaust gas cleaning system or use any other technological method to limit SOx emissions. The Baltic Sea Area is designated as a SOx Emission Control area in the Protocol. The North Sea was adopted as SOx Emission Control Area in July 2005. It also prohibits deliberate emissions of ozone depleting substances which include halons and chlorofluorocarbons (CFCs).[29] New installations containing ozone-depleting substances are prohibited on all ships. However, new installations containing hydro-chlorofluorocarbons (HCFCs) are permitted until 1 January 2020.[30] On the other hand, VOC emissions to be regulated especially for tankers. This include a proper VOC management plan implemented on board which need to be approved by the Flag.[31]

Annex VI also sets limits on emissions of nitrogen oxides (NOx) from diesel engines.[32] A mandatory NOx Technical Code, which defines how this shall be done, was adopted by the Conference under the cover of Resolution 2. The Annex also prohibits the incineration onboard ship of certain products, such as contaminated packaging materials and polychlorinated biphenyls (PCBs). The allowable shipboard incineration mechanism explicitly stated together with the suitable guidelines issued by the IMO.[33]

In 2011, IMO adopted mandatory technical and operational energy efficiency measures which are expected to significantly reduce the amount of CO_2 emissions from international shipping.[34] These mandatory measures (EEDI/SEEMP) entered into force on 1 January 2013.[35] IMO has adopted important guidelines aimed at supporting implementation of the mandatory measures to increase energy efficiency and reduce GHG emissions from international shipping, paving the way for the regulations on EEDI and SEEMP to be smoothly implemented by Administrations and industry. The expected growth of world trade represents

[28] IMO, 'Prevention of Air Pollution from Ships' (2016) </www.imo.org/en/ourwork/environment/pollutionprevention/airpollution/pages/air-pollution.aspx> accessed 30 December 2018.

[29] MARPOL Annex VI, Chapter 4, Regulation 12.

[30] IMO (n 28).

[31] MAPOL Annex VI, Chapter 4, Regulation 15.

[32] Ibid., Regulation 13.

[33] Ibid., Regulation 16.

[34] Ibid., Regulation 22.

[35] Ibid., Regulation 19, 20 and 21.

a challenge to meet a future target for emissions required to achieve stabilization in global temperatures and so IMO has begun consideration of further technical and operational measures to enhance the energy efficiency of ships.[36]

IMO also emphasizes the flag in undertaking to ensure the provision of facilities adequate to meet the needs of ships using its repair ports for the reception of ozone depleting substances and equipment containing such substances when removed from ships and needs of ships using its ports, terminals or repair ports for the reception[37] of exhaust gas cleaning residues from an exhaust gas cleaning system. A reasonable step to promote the availability of fuel oils that comply with Annex VI is to be established by the member state in regards to the availability of compliant fuel oils in its ports and terminals. These items shall be officially declared to IMO via IMO GISIS.[38]

3. WHY THE URGENT NEED FOR THE IMPLEMENTATION OF SHIP-SOURCE AIR POLLUTION IN THE LAWS OF MALAYSIA?

Malaysia is the small country but globally recognized as a maritime country with a population of over 32 million people and 330,621 kilometres per square area, lying within the pearl of the South East Asia, and has almost 230,000 million US dollar export trade annually.[39] The total reported vessels passing through the Malacca Straits is approximately 50,000 in 2006 but it is double in 2017.[40] It is more than 90,000 reported vessels through the Mandatory Malacca and Singapore Straits Reporting System (STRAITREP) in 2017. This figure is clearly reported during the 42nd Tripartite Technical Expert Group (TTEG) Meeting between three littoral states of Malaysia, Singapore and Indonesia. Additionally, the total ship berthing-

[36] IMO, 'Air Pollution , Energy Efficiency and Greenhouse Gas Emissions' <www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Default.aspx> accessed 1 January 2019.

[37] MARPOL Annex VI, Chapter 4, Regulation 17.

[38] MARPOL Annex VI, Chapter 4, Regulation 18; and '*GISIS' stands for IMO-Global Integrated Shipping Information System: The IMO web account framework to manage mandatory IMO modules of global database*.

[39] Malaysia Department of Statistics, 'Malaysia Statistics Handbook' (2017).

[40] Seatrade Maritime News, 'Malacca Straits VLCC Traffic Doubles in a Decade as Shipping Traffic Hits All Time High in 2017' (2018) <www.seatrade-maritime.com/news/asia/exclusive-malacca-straits-vlcc-traffic-doubles-in-a-decade-as-shipping-traffic-hits-all-time-high-in-2017.html> accessed 31 December 2018.

reporting in major ports of Malaysia for 2017 is 29,237 in 2017 and registered fleet is 5,180 (inclusive of all conventional and non-conventional size of ships) in year 2016.[41]

Besides MARPOL, Malaysia has participated in the negotiations of and eventually ratified the major international treaties concerning air pollution such as, the Paris Agreement 2015 under the parties of United Nations Framework Convention on Climate Change (UNFCCC) entered into force on 4 November 2016, Kyoto Protocol on UNFCCC signed on 11 December 1997 and entered into force on 16 February 2005, and Montreal Protocol on Substances that Deplete the Ozone Layer to the Vienna Convention on the Protection of the Ozone Layer signed on 1987 which entered into force on 16 September 1989.[42] Obviously, Malaysia must oblige of what has been ratified and decided by the country, internationally. As an advanced developing nation, Malaysia must show vibrant commitment to global climate change threat by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius, stated in the Paris Agreement 2016.

3.1 Regional Concerns

Malacca Straits is globally recognized as the heart of world's maritime trade lane. In conjunction, Malaysia needs to commit its indirect mandate to ensure the Straits is safe, secure, and environmentally-protected together with Indonesia and Singapore to pledge the concerns that has been showed by the great nations of the contributors.[43]

Singapore has launched Maritime Singapore Green Initiative since 2011 which comprises programmes such as Green Port, Green Ship, Green Technology, Green Awareness, and Green Energy. On the other hand, Indonesia has launched the Low Carbon Development Options since 2008 and they also have signed a Memorandum of Understanding with

[41] Malaysia Department of Statistics (n 39).

[42] United Nations Treaty Collection, <https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2-a&chapter=27&lang=en> accessed 19 February 2019.

[43] Cooperative Mechanism of Littoral States for Straits of Malacca and Singapore (CM-SOMS).

Denmark[44] to strengthen the green shipping actions to benefit both countries. Thus, it is critical for Malaysia by not only focusing on the land-based sector in terms of air pollution control mechanism domestically.

Malaysia needs to be at least on par with the neighbouring coastal States to implement a right control over air pollution matters regionally especially in the shipping industry. This region is rich in natural resources from fisheries, to mangrove swamps and rain forests, from tin to gas and oil fields, but also beset by problems of pollution through shipping and industries, deforestation by extensive logging and severe air pollution.[45] Several "Growth Triangles" have been constructed to create integrated special economic zones, like the SIJORI triangle, linking, Singapore with the Malaysian State of Johore and the Indonesian province of Riau. In view of that situation, Malaysia has to drive its direction by domestically-occupied and regionally-prepared in sustaining healthy social and economic growth in South East Asia through a conceivable air pollution and climate change implementation.

3.2 Health Factor

91% of the world's population live in places exceeding World Health Organization (WHO) air quality guidelines.[46] Adverse health consequences to air pollution can occur as a result of short- or long-term exposure. The pollutants with the strongest evidence of health effects are PM, ODS, NOX and SOx.[47] Even a small fine particles of them are a great risk to health, as they are capable of penetrating peoples' lungs and entering bloodstream.[48] NOx can increase bronchitis, and asthma.[49] Both NOx and SOx can affect the respiratory system, lung functions, and eyes irritation. Whereas, CO2 is the main contributor to climate change of global warming.[50].

[44] Plan of Action for the Partnership between The Government of Kingdom of Denmarks and The Government of the Republic of Indonesia 2017-2020.

[45] Evers Hans-Dieter and Gerke Solvay, 'The Strategic Importance of the Straits of Malacca for World Trade and Regional Development' (2006).

[46] 'Ambient Air Pollution' (*World Health Organization*) <www.who.int/airpollution/ambient/en/> accessed 12 February 2019.

[47] World Health Organization (n 4).

[48] Ibid.

[49] Ibid.

[50] Ibid.

In Malaysia itself, the number of disease and health problems caused by air pollution are extremely tormenting. The highest principal causes of death in Malaysia (Government Hospital): diseases of human's circulatory system showed 22.62%, while diseases of the respiratory system showed 21.65% in 2016.[51] Despite pregnancy and childbirth showed 23.07% as the main principal cause of hospitalisation, the diseases of the respiratory system were the next in-line with 12.80%, followed by circulatory system failure of 7.50%.[52]

3.3 Total Emission

For the period 2007–2012, on average, shipping accounted for approximately 3.1% of annual global CO2 and approximately 2.8% of annual GHGs basis using 100-year global warming potential conversions from the Intergovernmental Panel on Climate Change Fifth Assessment Report.[53] Although shipping only contributed a small portion from the global statistics but the total estimation of gas emitted for that particular year were amounted more than 2 billion tonnes.

In Malaysia scope: sources of air pollution and GHG emissions from the maritime sector are from ships transiting the Strait of Malacca, east peninsular coastline, Borneo coastlines, ships calling at Malaysian ports, and domestic ships trading within Malaysian waters. Total emissions attributed to domestic water-bourne navigation is estimated at 5.5 million tonnes (2015) based on bunker fuel sales and total emissions attributed to the national fleet is estimated at 4.2 million tonnes, calculated using the Third IMO GHG study (2014) emission factors.[54] Hence, if nothing is done yet business as usual, it was estimated that 8.4 million tonnes emission in 2030 and 16.8 million tonnes in 2050.[55]

[51] Ministry of Health Malaysia, 'Malaysia Health Facts Report' (2017).

[52] Ibid.

[53] IMO, 'Third IMO Greenhouse Gas Study 2014' (2014).

[54] Amy Aai Sheau Ye, 'Malaysia Maritime Energy Efficiency and Emission Status' (2017).

[55] Ibid.

3.4 Domestic support of other air-pollution laws

Fossil energy still possesses absolute share of the total energy consumption although Malaysia has adopted 5-Fuel-Diversification-Strategy energy mix since 1999. Malaysia has also passed the Renewal Energy Act 1991, Sustainable Development Authority Act 2011, Malaysian Biofuel Industry Act 2007, and Environmental Quality Act 1974. All of these acts together with their sub-regulations are supporting the control mechanism of gas emission mainly caused by land-based and ports.[56] Thus, significant incorporation of MARPOL Annex VI into national legislation contributes reducing the emissions at sea (registered fleet, internal water, territorial sea, and exclusive economic zone). Sustaining the long run economic growth are critically needed to support what have been implemented currently by other related agencies/ministries. It implies that emission reduction policies and more investment in pollution abatement will not hurt Malaysia economic growth and could be a feasible policy tool based on support-platform which has been aligned with the other related provisions.[57]

In the Ministry of Transport's working paper for key-performance-index (KPI) indication of 2017, total average increment of carbon emission based on IMO's emission calculator estimation[58] for domestic shipping is almost 74,000 tonnes. Due to that, Malaysia needs to consistently maintain maximum allowable emission per year at 74,000 tonnes. On the other hand, there are many local ports which are active in operation domestically in Sabah and Sarawak (the part of Borneo Island of Malaysia) and the northern and eastern of Peninsular Malaysia. Since only the southern peninsular ports (Johor Port Authority) had seriously gathered real-time emission data from ships entering its ports,[59] all other port authorities and especially the federal government have to support the necessity of national uniformity. With this intention, to have a legitimate law for ship-source air pollution is crucially significant in accordance to convene the national KPI and port standards which has been set thereof.

[56] Mok Lay Yong, 'Incorporation of Chapter 4 of MARPOL Annex VI into Malaysia's National Law' (2017).

[57] Behnaz Saboori, Jamalludin Sulaiman and Saidatulakmal Mohd, 'Economic Growth and CO 2 Emissions in Malaysia: A Cointegration Analysis of the Environmental Kuznets Curve' (2012) 51 Energy Policy 184.

[58] IMO (n 53).

[59] Sheau Ye (n 54).

3.5 Ratification without incorporation

Malaysia is a party to MARPOL Annex VI. However, the Annex is not properly incorporated into Malaysia law, precisely not directly stated in the Merchant Shipping Ordinance (MSO) 1952 (Ord. 70/1952). Annex VI is only circulated through Malaysia Shipping Notice (MSN). The MSN only serve the purpose of notifying shipping communities and seafarers that Malaysia has already ratified the said Annex. Hence, the implementation of the IMO Conventions through the method of MSN issuance is considered as a powerless administration in the legislative aspect. There is no control mechanism can be executed in regards to ship-source air pollution whether to the foreign ships which entered Malaysia water or to the fleet of Malaysia flag vessels.

4. HOW TO INCORPORATE ANNEX VI INTO MALAYSIA LEGISLATION

This section will explain the brief of Malaysian legal system and the ordinary method of converting international conventions to become domestic laws. Furthermore, it will clarify what is the right strategy to incorporate MARPOL Annex VI into the fundamental of Malaysia's shipping law─ MSO 1952.

4.1 Brief of Malaysian Legal System

The Federal Constitution is the highest law in Malaysia. The separation of powers also occurs both at federal and state levels. The federal laws enacted by the federal assembly, known as the Parliament of Malaysia, apply throughout the country. There are also state laws governing local governments and Islamic law enacted by the state legislative assembly which applies in the particular state.[60]

The Federal Constitution of Malaysia is the foremost legal instrument and contains 181 provisions, called Articles.[61] These Articles cover a myriad of issues such as the structures of the Federal and State Governments, the legislative powers of Parliament and State Legislative Assemblies, the fundamental rights of the individual, the jurisdiction of the superior courts and

[60] Shaik Mohamed Noordin and Shanti Supramaniam, 'An Overview of Malaysian Legal System and Research' (2016) <www.nyulawglobal.org/globalex/Malaysia1.html> accessed 1 January 2019.

[61] Federal Constitution of Malaysia 1946 (as amended on 27 December 2007).

many more. The Federal Constitution is the supreme law of the land. Any law passed must be consistent with the Federal Constitution. The powers of Parliament to legislate are contained within the parameters of the Federal Constitution. Its powers to legislate are not unfettered.[62] Should Parliament pass any law that is ultra vires (beyond its powers) under the Federal Constitution, it can be challenged in a court of law.

Malaysia is a dualist country. All treaties and conventions, including IMO Conventions, do not automatically become part of the local laws. Fundamentally, international convention is concluded by the Ministry of Foreign Affairs with the consultation of related ministries. Whereas the ratification of most international convention under maritime aspect is done by the Ministry of Transport with the advice of Ministry of Foreign Affairs.

4.2 Implementation of Conventions

The primacy of the jurisdiction of the flag State in environmental matters is confirmed by the provisions of the United Nations Convention on Law of the Sea (UNCLOS) 1982 entered into force on 10 December 1994. Article 228 (1) of the UNCLOS provides that the proceedings against a foreign ship must be suspended in the event of the flag State instituting proceedings within six months after the original charges were commenced. A flag State has to enforce international rules and standards irrespective of the place of violation (Article 217 of UNCLOS). Therefore, in effect a flag State can supersede the port State jurisdiction and dismiss any proceedings brought by that port State.[63]

By the method of tacit acceptance, Malaysia has ratified Annex IV and Annex VI too. Generally, Malaysia is the first country in South-East-Asia region that has ratified all of the MARPOL annexes. The right question to raise is: why does only Annex I and Annex III successfully translated into the Amendment Act of Merchant Shipping Ordinance 1952?[64] The new Part VA in MSO was inserted, clearly about those two Annexes reflecting the administrative legalities implementation while Annex VI is only circulated via Malaysia Shipping Notice.

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[62] National Public Administration Institute, *Malaysia Kita* (International Law Book Services - ILBS 1991).

[63] A Rakestraw, 'Open Oceans and Marine Debris: Solutions for the Ineffective Enforcement of MARPOL Annex V' (2012) 35 *Hastings Int'l & Comp. L. Rev* 392.

[64] Amendment Act A792.

Several statutory certificates issuance and technical surveys together with initial inspection under MARPOL are delegated to Recognized Organization (RO) for the International Oil Pollution Prevention Certificate (Annex I), the International Pollution Prevention Certificate of Noxious Liquid Substances in Bulk (Annex II), International Sewage Pollution Prevention Certificate (Annex IV), and the International Air Pollution Prevention Certificate (Annex VI).[65] Even though International Air Pollution Prevention Certificate (IAPP) is mandated to the RO, the International Energy Efficiency Certificate (IEEC) issuance and the Ship Energy Efficiency Management Plan (SEEMP) approval are the responsibility of the Administration Flag (Marine Department Malaysia). However, as for the new amendment of MARPOL Annex VI, the latest MSN was issued confirming the Statement of Compliance[66] and SEEMP are reviewed by the RO. This MSN reflected to the application of the conventional ship on international voyage with more than 5,000 gross tonnage in relation to the new Regulation 22A.[67]

The Malaysia Shipping Notices served for Annex II, IV, V, and VI are all directly copied from the related Resolutions of IMO Marine Environment Protection Committee (MEPC) with just a slight twist of exchanging the word 'Contracting Government' or 'Member States' to 'Malaysia' or 'Marine Department Malaysia'; and 'Administration' to 'Director General of Marine'. This matter had been highlighted during the Voluntary IMO Member State Audit Scheme (VIMSAS) of Malaysia[68] which the IMO auditors strongly recommended the proper incorporation and implementation of IMO Convention to be exclusively stated in the right weight of legal basis in Malaysia legislation. However, due to the lengthy process of the collaboration between Marine Department Malaysia, Department of Environment, and Ministry of Transport to exclusively reiterate the Annex VI to make domestic law, thus the similar method of Malaysia Shipping Notice issuance was pursued to extend the rapid implementation nationwide.

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[65] Malaysia Recognized Organization Instruction 8/2014, amended on 1 October 2014.

[66] IMO Resolution MEPC.292 (71), '2017 Guidelines for Administration Verification of Ship Field Oil Consumption Data' adopted on 7 July 2017.

[67] IMO Resolution MEPC.278 (70), 'Amendments to the Annex of The Protocol of 1997 to Amend The International Convention for the Prevention of Pollution From Ships, 1973, As Modified by The Protocol of 1978 Relating Thereto Amendments to MARPOL Annex VI (Data Collection System for Fuel Oil Consumption of Ships)' adopted on 28 October 2016.

[68] Malaysia was audited under VIMSAS in September 2009 and lack of legislation was one of the main findings.

4.3 Incorporation of MARPOL 1973 Annex VI into Malaysia Legislation

Implementation of MARPOL by Malaysia was done through two sources of law. Mainly, Annex I and III are incorporated in the Merchant Shipping Ordinance (MSO) 1952 under the Amendment Act of A792 of Section 306B to 306R. While Annex II, IV, and VI are only issued through MSN. MSN is means for public circular stating that Malaysia has ratified the convention. They have been circulated via various MSNs depending on the type of emission and related IMO resolutions.[69] In regards to Annex VI, the MSNs are as follows: -

a) MSN 20/2011 – Sulphur Monitoring Guidelines;
b) MSN 21/2011 – Exhaust Gas Cleaning Guidelines;
c) MSN 24/2011 – Enforcement of MARPOL Annex VI for Malaysian Ships and Foreign Ships in Malaysia Water;
d) MSN 25/2011 – VOC Guidelines;
e) MSN 09/2012 – The adoption of Chapter of 4 (energy efficiency) of MARPOL Annex VI;
f) MSN 03/2013 – in relating to Emission Control Area requirement;
g) MSN 05/2018 – Fuel Oil Data Collection System (DCS) of Reg. 22A of MARPOL Annex VI.

They are seven notices in regards to Annex VI have been issued by Malaysia which are only for shipping community alert and guides. In fact, Malaysia no right to execute the offense. MYR (Malaysian Ringgit) 50,000.00 of fine under Section 306F (1) and (2) of the MSO for the offence committed are only applicable for Annex I and Annex III of MARPOL. It is in reliance to Section 306D where only oil-pollution and harmful-substances related are considered an offence to the notices.[70] However, all other notices in regards to another Annexes

[69] Annex I – MSN 16/2011, MSN 39/2008, MSN 42/2008; Annex II – MSN 44/2008; Annex III – MSN 22/2011, Annex IV – MSN 02/2013, MSN 23/2011; Annex V – MSN 45/2008.

[70] Section 306D(1): "Where oil or harmful substance is escaping from, or where the Director of Marine is satisfied that oil or harmful substance is likely to escape from, a ship, then, for the purpose of preventing or reducing the extent of the pollution or likely pollution by the oil or harmful substance of any Malaysian waters, any part of the Malaysian coast or any Malaysian reef, the Director of Marine, in consultation with the Director-General of Environmental Quality, may, by notice in writing addressed to the owner of the ship and served in accordance with section 306E, do all or any of the following…"

particularly Annex VI, are not served under the same section. They are reflected by the provision of Section 519A MSO which is only an administrative and technical matters, with no whatsoever punitive clause such as offence, fees, fines, etc.[71]

It is highly suggested that the most appropriate option to incorporate MARPOL Annex VI into Malaysia legislation is through Section 306K MSO. This section gives the Minister the power to make regulations for the control of ship source pollution. Several subsections can be justified to enable the control of ship's air pollution and be translated into legitimate regulations. Section 306K, states:

> The Minister may make such rules as he considers necessary or expedient to provide for the carriage or storage of oil or harmful substance at sea, the control of pollution from ships and for matters connected therewith, and without prejudice to the generality of such powers may make rules for –
>
> (a) the design, construction, subdivision and alteration of ships, their equipment, machinery and electrical installations;
> (b) the inspection and survey of ships, their hull, machinery, equipment and installations;
> (c) the form, issue, validity, duration and extension of certificates or exemption certificates;
> […]
> (i) prescribing fees for anything to be done or permitted to be done under the rules;
> (j) the implementation in whole or in part of any international convention, code or resolution relating to marine pollution or any matter incidental thereto or connected therewith;
> (k) the exemption of a ship or a class of ships from any requirement under this Part;
> (l) prescribing the authority for the issue of certificates prescribed under this Part;
> […]

Section 306K states that the Minister has power to make rules not only to oil and harmful substances, but 'the control of pollution from ships and for matters connected therewith'. This is incidentally allowing the regulation of ship-source air pollution can be made justifying the said section. The subsection (a) permits the rules of equipment, machinery, and electrical instruments while subsection (b) covers the survey and inspection matters under

[71] Section 519A, Power of Director of Marine to issue Malaysia Shipping Notices:

(1) Subject to the provisions of the Ordinance, the Director of Marine may issue Malaysia Shipping Notices in respect of administrative matters or technical matters relating to shipping, navigation, maritime transport safety and security and marine pollution, as may be necessary for the purposes of the
Ordinance.

(2) The Director of Marine may, in the Malaysia Shipping Notice, prescribe that any provision of that notice shall be applicable to any specified person or ship, or classes of ships.

(3) The rules relating to shipping, navigation, maritime transport safety and security and marine pollution made in pursuance of this Ordinance may provide that noncompliance with Malaysia Shipping Notices shall be an offence.

Chapter 2 of Annex VI. Subsection (i) enable the Minister to prescribe related fee. The most important justification derived from subsection (j) which allow rules to be made due to 'the implementation in whole or in part of any international convention, code or resolution relating to marine pollution or any matter incidental thereto or connected therewith'. For the purpose of that subsection, it shows that any annex in regards to MARPOL may be directly converted into regulations by the given power to the Minister. The delegated power to Director of Marine under the subsections (k) and (l), can be sanctioned for the exemption of a ship or a class of ships from any requirement and prescribing the authority for the issue of certificates.

On the other hand, effective implementation of the Annex VI can be assured as non-compliance or the contravenes of the said rules, be penalized under the Section 306K(2) which vis-à-vis to the main Section 306K. Once the Draft has been confirmed by the Legal Advisor of Ministry of Transport and the Attorney-General, the current Minister may approve by noting signature and notice to be gazetted. If the regulations have been in-effect, the Annex VI technical matters under IMO guidelines and recommendations from related technical Code may be issued via MSN. Simultaneously, all MSNs of Annex VI which have been circulated previously may be revoked since the regulations will supersede the previous redundancy notices. Based on generally MARPOL Annex I and Annex III have been incorporated to MSO, certain definitions from the Draft may directly refer to the Ordinance itself. If in related of any interpretation or doubt in regards to any terminology, Regulation 2 (2) of the Draft shall apply.

In order to overcome the problems of resources capacity of the competent authority, Annex VI inspections and surveys may be delegated to the Recognized Organization (RO). Whereas to comply with SEEMP, fuel oil data collection system (DCS), and the commitment of Annex VI data-entry to IMO GISIS─ government officials shall take over the duty to oversee RO's effectiveness[72]. As for that matters, the competent authority's internal expertise can be strengthening to ensure procedural efficiency.

In a nutshell, Malaysia is a maritime nation that never abandon the marine air pollution impact despite the size of the country along its marine coastal area and towards its national flag fleet. As the Council Member of IMO since 2006 to date, Malaysia needs a comprehensive legislation to incorporate MARPOL Annex VI domestically (for ships in Malaysia territorial

[72] Obligation to Code for Recognized Organizations (RO Code) via IMO Resolution MSC. 349(92).

waters) and internationally (beyond domestic voyage of Malaysia registered ships) through a proper legal incorporation and implementation. The Draft of regulations is as per Appendix 1.

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FEDERAL SUBSIDIARY LEGISLATION
MERCHANT SHIPPING ORDINANCE 1952

MERCHANT SHIPPING (PREVENTION OF AIR POLLUTION) REGULATIONS 20XX

Preamble

IN exercise of the power conferred by subsections 306_K(1)(a), (b), (i), (j), (k), (l), and (n) of the Merchant Shipping Ordinance 1952, the Minister makes the following regulations:

ARRANGEMENT OF REGULATIONS

PART I
GENERAL PROVISIONS

Regulation 1. Citation and commencement

These regulations may be cited as the Merchant Shipping (Prevention of Air Pollution) Regulations 20XX and shall come into force on XXXX.

Regulation 2. Interpretation

(1) In these regulations, unless the context otherwise requires─

"A similar stage of construction" means the stage at which construction identifiable with a specific ship begins; and assembly of that ship has commenced comprising at least 50 tons or one per cent of the estimated mass of all structural material, whichever is less;

"Anniversary date" means the day and the month of each year that will correspond to the date of expiry of the International Air Pollution Prevention Certificate;

"Attained EEDI" is the Energy Efficiency Design Index value achieved by an individual ship in accordance with Part IV;

"Auxiliary control device" means a system, function, or control strategy installed on a marine diesel engine that is used to protect the engine and/or its ancillary equipment against operating conditions that could result in damage or failure, or that is used to facilitate the starting of the engine. An auxiliary control device may also be a strategy or measure that has been satisfactorily demonstrated not to be a defeat device;

"Calendar year" means the period from 1 January until 31 December inclusive;

"Certificate" means the International Prevention of Air Pollution Certificate or International Energy Efficiency Certificate, or both, whichever these regulations apply to the ship;

"Company" means the owner of a ship or, any other entity or person such as the ashore manager or bareboat charterer who has assumed responsibility for the operation of the ship from the owner of the ship and who on assuming such responsibility has agreed to take over all duties and responsibilities relating to the safe operation of the ship;

"Continuous feeding" is defined as the process whereby waste is fed into a combustion chamber without human assistance while the incinerator is in normal operating conditions with the combustio chamber operative temperature between 850°C and 1,200°C;

"Convention" means Annex VI of the Protocol of 1997 to the Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) as amended;

"Conventional propulsion" in relation to Part IV of these regulations means a method of propulsion where a main reciprocating internal combustion engine(s) is the prime mover and coupled to a propulsion shaft either directly or through a gear box;

"Defeat device" means a device which measures, senses, or responds to operating variables (engine speed, temperature, intake pressure or any other parameter) for the purpose of activating, modulating, delaying or deactivating the operation of any component or the function of the emission control system, such that the effectiveness of the emission control system is reduced under conditions encountered during normal operation, unless the use of such a device is substantially included in the applied emission certification test procedures;

"Director of Marine" means the Director referred to the section 8 of the Ordinance or any officer duly appointed under section 8(4);

"Distance travelled" means ship's distance travelled over ground;

"Emission" means any release of substances, subject to control by these regulations, from ships into the atmosphere or sea;

"Existing ship" means a ship which is not a new ship;

"Fuel oil" means any fuel delivered to and intended for combustion purposes for propulsion or operation on board a ship, including gas, distillate and residual fuels;

"Major Conversion" means in relation to Part IV a conversion of a ship─

a) which substantially alters the dimensions, carrying capacity or engine power of the ship; or

b) which changes the type of the ship; or

c) the intent of which in the opinion of the Director of Marine is substantially to prolong the life of the ship;

d) which otherwise so alters the ship that, if it were a new ship, it would become subject to relevant provisions of the present Convention not applicable to it as an existing ship; or

e) which substantially alters the energy efficiency of the ship and includes any modifications that could cause the ship to exceed the applicable required EEDI;

"Marine diesel engine" means any reciprocating internal combustion engine operating on liquid or dual fuel, to which Part III of these regulations applies, including booster/compound systems if applied. In addition, a gas fuelled engine installed on a ship constructed on or after 1 March 2016 or a gas fuelled additional or non-identical replacement engine installed on or after that date is also considered as a marine diesel engine;

"New ship" means a ship─

a) for which the building contract is placed on or after 1 January 2013; or

b) in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2013; or

c) the delivery of which is on or after 1 July 2015;

*"*Non-conventional propulsion" in relation to Part IV of these regulations means a method of propulsion, other than conventional propulsion, including diesel-electric propulsion, turbine propulsion, and hybrid propulsion systems;

"NOx Technical Code 2008" is the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines derrived from International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) adopted by Conference resolution 2;

"IMO" means the International Maritime Organization;

"Required EEDI" is the maximum value of attained EEDI that is allowed by Regulation 21 of Part IV for the specific ship type and size;

"SEEMP" means the Ship Energy Efficiency Management Plan;

"Statement" means the Statement of Compliance for fuel oil consumption reporting;

"Shipboard incinerator" means a shipboard facility designed for the primary purpose of incineration;

"Ships constructed" means ships the keels of which are laid or that are at a similar stage of construction;

"Sludge oil" means sludge from the fuel oil or lubricating oil separators, waste lubricating oil from main or auxiliary machinery, or waste oil from bilge water separators, oil filtering equipment or drip trays;

(2) For the purpose of these regulations, other references shall be made herewith the Ordinance, Schedules, or the related international conventions, as it may deem fit by the Director of Marine.

Regulation 3. Application

(1) These regulations shall, unless the context otherwise requires, apply to all ships.

(2) These regulations shall not, unless the context otherwise requires, apply to—

a) government and war ships; and

b) pleasure crafts.

(3) These regulations shall not apply to—

a) any emission necessary for the purpose of securing the safety of a ship or saving life at sea; or

b) any emission resulting from damage to a ship or its equipment, provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the emission for the purpose of preventing or minimizing the emission; and except if the owner or the master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result.

(4) The Director of Marine may exempt, or waive, any criteria from Part III or IV of these regulations, as he deems fit for the conditions of the ship as follows:

a) conducting trials for ship emission reduction and control technology research; or

b) emissions from sea-bed mineral activities; or

c) restricted operation within one domestic port.

Regulation 4. Equivalents

(1) The Director of Marine 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 these regulations 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 these regulations, including any of the standards set forth in Part III and IV.

PART II
SURVEY, CERTIFICATION, AND MEANS OF CONTROL

Regulation 5. Survey

(1) Every ship of 400 gross tonnage and above and every fixed and floating drilling rig and other platforms shall, to ensure that the equipment, systems, fittings, arrangements and material fully comply with the applicable requirements of Part III, be subject to the surveys specified below:

a) An initial survey before the ship is put into service or before the certificate issuance is required for the first time;

b) A renewal survey at intervals not exceeding five years;

c) An intermediate survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the certificate;

d) An annual survey within three months before or after each anniversary date of the certificate;

e) An additional survey either general or partial, according to the circumstances, shall be made whenever any repairs or renewals are made or after a repair resulting from investigations, for any equipment, systems, fittings, arrangements or material in related to the compliance of these regulations.

(2) The Director of Marine may establish appropriate measures for the ship of less than 400 gross tonnage, and operating within one domestic port limit.

(3) The Director of Marine may delegate the exercise of the surveys as regards the enforcement of the provisions of these regulations, to any authorized officers or recognized organizations.

(4) If any condition of the equipment does not correspond substantially with the particulars of the certificate, surveyor shall ensure that corrective action is taken and shall in due course notify the Director of Marine. If such corrective action is not taken within the appropriate given time, the certificate shall be withdrawn by the Director of Marine.

(5) Every ship to which Part IV applies shall be subject to the surveys specified below:

a) An initial survey before a new ship is put in service and before the International Energy Efficiency Certificate is issued. The survey shall verify that the ship's attained EEDI is in accordance with the requirements in Regulation 21, and that the SEEMP required by Regulation 22 is on board;

b) A general or partial survey, after a conversion of a new ship. The survey shall ensure that the attained EEDI is recalculated as necessary, with the reduction factor applicable to the ship type and size of the converted ship, in the phase corresponding to the date of contract or keel laying or delivery determined for the original ship in accordance as new ship;

c) In cases where the major conversion of a new or existing ship is so extensive that the ship is regarded by the Director of Marine as a newly constructed ship, the Director of Marine shall determine the necessity of an initial survey on attained EEDI. Such a survey, if determined necessary, shall ensure that the attained EEDI is calculated and meets the requirement of Regulation 21, with the reduction factor applicable corresponding to the ship type and size of the converted ship at the date of the contract of the conversion, or in the absence of a contract, the commencement date of the conversion. The survey shall also verify that the SEEMP required by Regulation 22 is on board and for a ship to which Regulation 23 applies, has been revised appropriately to reflect a major conversion in those cases where the major conversion affects data collection methodology and/or reporting processes;

d) For existing ships, the verification of the requirement to have a SEEMP on board according to Regulation 22 shall take place at the first intermediate or renewal survey identified in subregulation (1), whichever is the first;

e) For ship 5,000 gross tonnage and above, the SEEMP methodology for data collection system shall be approved in order to ensure the methodology and processes are in place prior to the beginning of the ship's first reporting period. Confirmation of compliance shall be provided to and retained on board the ship;

f) The equipment shall be maintained to conform with the provisions of these regulations and no changes shall be made in the equipment, systems, fittings, arrangements, or material covered by the survey, without the express approval of the Director of Marine. The direct replacement of such equipment and fittings with equipment and fittings that conform with the provisions of these regulations is permitted;

g) Whenever an accident occurs to a ship or a defect is discovered that substantially affects the efficiency or completeness of its equipment covered by these regulations, the master or Company of the ship shall report at the earliest opportunity to the Director of

Marine, a nominated surveyor, or recognized organization responsible for issuing the relevant certificate.

Regulation 6. Issuance of Certificate and Statement

International Air Pollution Prevention Certificate

(1) International Air Pollution Prevention Certificate shall be issued, after an initial or renewal survey in accordance with the provisions of Regulation 5 to:

a) any ship of 400 gross tonnage and above engaged in voyages to foreign ports or foreign offshore terminals; or

b) platforms and drilling rigs engaged in voyages to waters not under the sovereignty or jurisdiction of Malaysia; or

c) any ship or class of ship as determined by the Director of Marine.

(2) For ship constructed before 27 December 2010, shall be issued with an International Air Pollution Prevention Certificate in accordance with subregulation (1) no later than the first scheduled dry-docking after the date of such entry into force, but in no case later than three years after this date.

International Energy Efficiency Certificate

(3) An International Energy Efficiency Certificate for the ship shall be issued after a survey in accordance with the Regulation 5 to any ship of 400 gross tonnage and above before that ship may engage in voyages to foreign ports or offshore terminals.

Statement of Compliance

(4) Upon receipt of valid reported data in accordance to Regulation 23(3), Statement of Compliance shall be issued related to fuel oil consumption to the ship no later than five months from the beginning of the calendar year.

(5) Upon receipt of valid reported data in accordance to Regulation 23(4), 23(5), or 23(6), Statement of Compliance shall be issued related to fuel oil consumption to the ship to the ship at that time.

(6) Such certificates and statements shall be issued or endorsed either by the Director of Marine or by officer or organization duly authorized.

Regulation 7. Certificates and statement issuance to Malaysia ship

(1) The issuance of any certificates, or statements, in accordance to these regulations by the Director of Marine, is only to Malaysia ship.

Regulation 8. Form of Certificate and Statements of Compliance

(1) The International Air Pollution Prevention Certificate shall be drawn up in a form corresponding to the model given in First Schedule.

(2) The International Energy Efficiency Certificate shall be drawn up in a form corresponding to the model given in Second Schedule.

(3) The Statement of Compliance shall be drawn up in a form corresponding to the model given in Third Schedule.

Regulation 9. Duration and Validity of Certificates and Statement of Compliance

(1) An International Air Pollution Prevention Certificate shall be issued for a period specified by the Director of Marine with a maximum period of five years.

(2) Notwithstanding subregulation (1):

a) when the renewal survey is completed within three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate;

b) when the renewal survey is completed after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate; and

c) when the renewal survey is completed more than three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.

(3) If a certificate is issued for a period of less than five years, the Director of Marine may extend the validity of the certificate beyond the expiry date to the maximum period specified in Regulation 9 (1), provided that the surveys referred to in Regulation 5(1)(c) and Regulation 5(1)(d) applicable when a certificate is issued for a period of five years are carried out as appropriate.

(4) If a renewal survey has been completed and a new certificate cannot be issued or placed on board the ship before the expiry date of the existing certificate, the person or organization

authorized by the Director of Marine may endorse the existing certificate and such a certificate shall be accepted as valid for a further period that shall not exceed five months from the expiry date.

(5) If a ship, at the time when a certificate expires, is not in a port in which it is to be surveyed, the Director of Marine may extend the period of validity of the certificate, for a period not longer than 3 months, for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding five years from the date of expiry of the existing certificate before the extension was granted.

(6) A certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this regulation may be extended by the Director of Marine for a period of grace of up to one month from the date of expiry stated on it.

(7) In special circumstances, as determined by the Director of Marine, a new certificate need not be dated from the date of expiry of the existing certificate as required subregulation (2), (5) or (6). In these special circumstances, the new certificate shall be valid to a date not exceeding five years from the date of completion of the renewal survey.

(8) If an annual or intermediate survey is completed before the period specified in Regulation 5, then─

a) the anniversary date shown on the certificate shall be amended by endorsement to a date that shall not be more than three months later than the date on which the survey was completed;

b) the subsequent annual or intermediate survey required by Regulation 5 shall be completed at the intervals prescribed by that regulation using the new anniversary date; and

c) the expiry date may remain unchanged provided one or more annual or intermediate surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by Regulation 5 are not exceeded.

(9) A certificate issued under Regulation 6 or 7 of these regulations shall cease to be valid in any of the following cases─

a) if the relevant surveys are not completed within the periods specified under Regulation 5(1);

b) if the certificate is not endorsed in accordance with Regulation 5(1)(3) or 5(1)(4); and

c) upon transfer of the ship to the flag of another State. A new certificate shall only be issued after the ship is in compliance with the requirements of Regulation 5(4). In the case of a transfer, if requested within three months after the transfer has taken place, the foreign competent authority whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Director of Marine copies of the certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

International Energy Efficiency Certificate

(10) The International Energy Efficiency Certificate shall be valid throughout the life of the ship subject to the provisions of subregulation (11).

(11) An International Energy Efficiency Certificate issued shall cease to be valid in any of the following cases─

a) if the ship is withdrawn from service or if a new certificate is issued following major conversion of the ship; or

b) upon transfer of the ship to the flag of another State. A new certificate shall only be issued after the ship is in compliance with the requirements of Part IV. In the case of a transfer between Parties, if requested within three months after the transfer has taken place, the competent authority whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Director of Marine copies of the certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

Statement of Compliance – Fuel Oil Consumption Reporting

(12) The Statement of Compliance pursuant to Regulation 6(6) shall be valid for the calendar year in which it is issued and for the first five months of the following calendar year. The Statement of Compliance pursuant to Regulation 6(7) shall be valid for the calendar year in which it is issued, for the following calendar year, and for the first five months of the subsequent calendar year. All Statements of Compliance shall be kept on board for at least the period of their validity.

Regulation 10. Verifications

(1) The Director of Marine, upon receipt of an application from the company and upon complete verification that he is satisfied that the Company and ship has complied with all the requirements of these regulations, issue a certificate or statement, in respect of the ship indicated in that document upon payment of the prescribed fees.

(2) The verification of all records and documentations of these regulations, expressly for Part IV, the Director of Marine may delegate the exercise of the verifications as regards the

enforcement of the provisions of these regulations, to any authorized officers or recognized organizations.

Regulation 11. Foreign enforcement on Malaysia ship

(1) Any Malaysia ship to which the Convention applies may, in foreign water, port or offshore terminal, be subject to enforcement by officers appointed or authorized by the foreign competent authority, for the purpose of verifying whether the ship is in violation. If an enforcement indicates a violation, or inquiry, a report shall be forwarded to the Director of Marine.

(2) The report as in subregulation (1) may be forwarded by the foreign competent authority and the Company. The Director of Marine shall proceed with any appropriate action as stated in Part V.

PART III
REQUIREMENTS OF CONTROL OF EMISSIONS FROM SHIPS

Regulation 12. Ozone-depleting substances

(1) This regulation does not apply to permanently sealed equipment where there are no refrigerant charging connections or potentially removable components containing ozone-depleting substances.

(2) Subject to the provisions of Regulation 3(1), any deliberate emissions of ozone-depleting substances shall be prohibited. Deliberate emissions include emissions occurring in the course of maintaining, servicing, repairing or disposing of systems or equipment, except that deliberate emissions do not include minimal releases associated with the recapture or recycling of an ozone-depleting substance. Emissions arising from dileberate leaks of an ozone-depleting substance, is an offence.

(3) Installations that contain ozone-depleting substances:

a) other than hydro-chlorofluorocarbons, shall be prohibited for─

i. on ships constructed on or after 19 May 2005; or

ii. in the case of ships constructed before 19 May 2005, which have a contractual delivery date of the equipment to the ship on or after 19 May 2005 or, in the absence of a contractual delivery date, the actual delivery of the equipment to the ship on or after 19 May 2005.

b) Installations which contain hydro-chlorofluorocarbons shall be prohibited—

i. on ships constructed on or after 1 January 2020; or

ii. in the case of ships constructed before 1 January 2020, which have a contractual delivery date of the equipment to the ship on or after 1 January 2020 or, in the absence of a contractual delivery date, the actual delivery of the equipment to the ship on or after 1 January 2020.

(4) The substances referred to in this regulation, and equipment containing such substances, shall be delivered to appropriate reception facilities when removed from ships.

(5) Each ship subject to Regulation 6(1) shall maintain a list of equipment containing ozone-depleting substances.

(6) Each ship subject to Regulation 6(1) that has rechargeable systems that contain ozone-depleting substances shall maintain an ozone-depleting substances record book. This record book may form part of an existing log-book or electronic recording system as approved by the Director of Marine.

(7) Entries in the ozone-depleting substances record book shall be recorded in terms of mass (kilogram) of substance and shall be completed without delay on each occasion, in respect of the following:

a) recharge, full or partial, of equipment containing ozone-depleting substances;

b) repair or maintenance of equipment containing ozone-depleting substances;

c) discharge of ozone-depleting substances to the atmosphere whether deliberate or non-deliberate;

d) discharge of ozone-depleting substances to land-based reception facilities; and

e) supply of ozone-depleting substances to the ship.

Regulation 13. Nitrogen Oxides (NOx)

Application

(1) The application of Regulation 13 is as follows:

a) This regulation shall apply to—

i. each marine diesel engine with a power output of more than 130 kW installed on a ship; and

ii. each marine diesel engine with a power output of more than 130 kW that undergoes a major conversion on or after 1 January 2000 except when demonstrated to the satisfaction of the Director of Marine that such engine is an identical replacement to the engine that it is replacing and is otherwise not covered under subregulation 1(a)(i).

b) This regulation does not apply to—

i. a marine diesel engine intended to be used solely for emergencies, or solely to power any device or equipment intended to be used solely for emergencies on the ship on which it is installed, or a marine diesel engine installed in lifeboats intended to be used solely for emergencies; and

ii. a marine diesel engine installed on a Malaysia ship exclusively engaged in voyages within Malaysia waters, provided that such engine is subject to an alternative NOx control measure established by the Director of Marine.

c) Notwithstanding the provisions of subregulation (1)(a), the Director of Marine may provide an exclusion from the application of this regulation for any marine diesel engine that is installed on a ship constructed, or for any marine diesel engine that undergoes a major conversion, before 19 May 2005, provided that the Malaysia ship on which the engine is installed is exclusively engaged in voyages to ports or offshore terminals within Malaysia waters.

Major Conversion

(2) For the purpose of major conversion of Regulation 13:

a) Major conversion means a modification on or after 1 January 2000 of a marine diesel engine that has not already been certified to the standards set forth in subregulation (3), (4), or (5)(a)(i) where—

i. the engine is replaced by a marine diesel engine or an additional marine diesel engine is installed, or

ii. any substantial modification, as defined in the revised NOx Technical Code 2008, is made to the engine, or

iii. the maximum continuous rating of the engine is increased by more than 10% compared to the maximum continuous rating of the original certification of the engine.

b) For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine, or the installation of an additional marine diesel engine, the standards in this regulation at the time of the replacement or addition of the engine shall apply. In the case of replacement engines only, if it is not possible for such a replacement engine to meet the standards set forth in subregulation (5)(a)(i) of this regulation (Tier III, as applicable), then that replacement engine shall meet the standards set forth in subregulation (4) (Tier II).

c) A marine diesel engine referred to in subregulation (2)(a)(ii) or (2)(a)(iii) shall meet the following standards:

i. for ships constructed prior to 1 January 2000, the standards set forth in subregulation (3) shall apply; and

ii. for ships constructed on or after 1 January 2000, the standards in force at the time the ship was constructed shall apply.

Tier I

(3) Subject to Regulation 3, the operation of a marine diesel engine that is installed on a ship constructed on or after 1 January 2000 and prior to 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO2) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

a) 17.0 g/kWh when n is less than 130 rpm;

b) 45·n(-0.2) g/kWh when n is 130 or more but less than 2,000 rpm;

c) 9.8 g/kWh when n is 2,000 rpm or more.

Tier II

(4) Subject to Regulation 3, the operation of a marine diesel engine that is installed on a ship constructed on or after 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO2) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

a) 14.4 g/kWh when n is less than 130 rpm;

b) 44 · n(-0.23) g/kWh when n is 130 or more but less than 2,000 rpm;

c) 7.7 g/kWh when n is 2,000 rpm or more.

Tier III

(5) Subject to Regulation 3, in an emission control area designated for Tier III NOX control under subregulation 6 (NOx Tier III emission control area), the operation of a marine diesel engine that is installed on a ship:

a) is prohibited except when the emission of nitrogen oxides (calculated as the total weighted emission of NO2) from the engine is within the following limits, where *n* = rated engine speed (crankshaft revolutions per minute):

i. 3.4 g/kWh when *n* is less than 130 rpm;

ii. $9 \cdot n$ (–0.2) g/kWh when *n* is 130 or more but less than 2,000 rpm;

iii. 2.0 g/kWh when *n* is 2,000 rpm or more;

b) When that ship is constructed on or after─

i. 1 January 2016 and is operating in the North American Emission Control Area or the United States Caribbean Sea Emission Control Area;

ii. 1 January 2021 and is operating in the Baltic Sea Emission Control Area or the North Sea Emission Control Area;

c) When that ship is operating in a NOx Tier III emission control area, other than an emission control area described in subregulation 5(b), and is constructed on or after the date of adoption of such an emission control area, or a later date as may be specified in the amendment designating the NOX Tier III emission control area, whichever is later.

d) The standards set forth in subregulation 5(a) shall not apply to─

i. a marine diesel engine installed on a ship with a length of less than 24 metres when it has been specifically designed, and is used solely, for recreational purposes; or

ii. a marine diesel engine installed on a ship with a combined nameplate diesel engine propulsion power of less than 750 kW if it is demonstrated, to the satisfaction of the Director of Marine, that the ship cannot comply with the standards set forth in subregulation 5(a) because of design or construction limitations of the ship; or

iii. a marine diesel engine installed on a ship constructed prior to 1 January 2021 of less than 500 gross tonnage, with a length of 24 metres or over when it has been specifically designed, and is used solely, for recreational purposes.

e) The tier and on/off status of marine diesel engines installed on board a ship to which subregulation 5(a) applies which are certified to both Tier II and Tier III or which are certified to Tier II only shall be recorded in such logbook as prescribed by the Director of Marine at entry into and exit from a NOx Tier III emission control area, or when the on/off status changes within such an area, together with the date, time and position of the ship.

f) Emissions of nitrogen oxides from a marine diesel engine subject to subregulation 5(a) that occur immediately following building and sea trials of a newly constructed ship, or before and following converting, repairing, and/or maintaining the ship, or maintenance or repair of a Tier II engine or a dual fuel engine when the ship is required to not have gas fuel or gas cargo on board due to safety requirements, for which activities take place in a shipyard or other repair facility located in a NOX Tier III emission control area are temporarily exempted provided the following conditions are met:

i. the engine meets the Tier II NOX limits; and

ii. the ship sails directly to or from the shipyard or other repair facility, does not load or unload cargo during the duration of the exemption, and follows any additional specific routing requirements indicated by the port State in which the shipyard or other repair facility is located, if applicable.

g) The exemption described in subregulation 5(f) of this regulation applies only for the following period:

i. for a newly constructed ship, the period beginning at the time the ship is delivered from the shipyard, including sea trials, and ending at the time the ship directly exits the NOX Tier III emission control area(s) or, with regard to a ship fitted with a dual fuel engine, the ship directly exits the NOX Tier III emission control area(s) or proceeds directly to the nearest gas fuel bunkering facility appropriate to the ship located in the NOX Tier III emission control area(s);

ii. for a ship with a Tier II engine undergoing conversion, maintenance or repair, the period beginning at the time the ship enters the NOX Tier III emission control area(s) and proceeds directly to the shipyard or other repair facility, and ending at the time the ship is released from the shipyard or other repair facility and directly exits the NOX Tier III emission control area (s) after performing sea trials, if applicable; or

iii. for a ship with a dual fuel engine undergoing conversion, maintenance or repair, when the ship is required to not have gas fuel or gas cargo on board due to safety requirements, the period beginning at the time the ship enters the NOX Tier III emission control area(s) or when it is degassed in the NOX Tier III emission control area(s) and proceeds directly to the shipyard or other repair facility, and ending at the time when the ship is released from the shipyard or other repair facility and directly exits the NOX Tier III emission control area(s) or proceeds directly to the nearest gas fuel bunkering facility appropriate to the ship located in the NOX Tier III emission control area(s).

Emission Control Area

(6) For the purposes of this regulation, a NOX Tier III emission control area shall be any sea area, including any port area, designated by the IMO. The NOX Tier III emission control areas are:

a) the North American Emission Control Area, which means the area described by the coordinates provided in Fourth Schedule;

b) the United States Caribbean Sea Emission Control Area, which means the area described by the coordinates provided in Fourth Schedule;

c) the Baltic Sea Emission Control Area as defined in Convention;

d) the North Sea Emission Control Area as defined in Convention.

Marine Diesel Engines Installed on a Ship Constructed Prior to 1 January 2000

(7) Notwithstanding subregulation 1(a)(i), a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000 shall comply with the emission limits set forth in subregulation 7(d), provided that an approved method for that engine has been certified by Director of Marine:

a) Compliance with subregulation (7) shall be demonstrated through one of the following:

i. installation of the certified approved method, as confirmed by a survey using the verification procedure specified in the approved method file, including appropriate notation on the ship’s International Air Pollution Prevention Certificate of the presence of the approved method; or

ii. certification of the engine confirming that it operates within the limits set forth in subregulation (3), (4), or (5)(a)(i) and an appropriate notation of the engine certification on the ship's International Air Pollution Prevention Certificate.

b) Subregulation (7)(a) shall apply no later than the first renewal survey that occurs 12 months or more after deposit of the notification in subregulation (7)(a). If a shipowner of a ship on which an approved method is to be installed can demonstrate to the satisfaction of the Director of Marine that the approved method was not commercially available despite best efforts to obtain it, then that approved method shall be installed on the ship no later than the next annual survey of that ship which falls after the approved method is commercially available.

c) With regard to a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990, but prior to 1 January 2000, the International Air Pollution Prevention Certificate shall, for a marine diesel engine to which these regulations 7.1 of this regulation applies, indicate one of the following:

i. an approved method has been applied pursuant to subregulation (7)(a)(i);

ii. the engine has been certified pursuant to subregulation (7)(a)(i);

iii. an approved method is not yet commercially available as described in subregulation (7)(b); or

iv. an approved method is not applicable.

d) Subject to Regulation 3, the operation of a marine diesel engine described in subregulation (7)(a) is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO2) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

i. 17.0 g/kWh when n is less than 130 rpm;

ii. $45 \cdot n(-0.2)$ g/kWh when n is 130 or more but less than 2,000 rpm; and

iii. 9.8 g/kWh when n is 2,000 rpm or more.

e) Certification of an approved method shall be in accordance with chapter 7 of the revised NOx Technical Code 2008 and shall include verification:

i. by the designer of the base marine diesel engine to which the approved method applies that the calculated effect of the approved method will not decrease engine rating by more than 1.0%, increase fuel consumption by more than 2.0%

as measured according to the appropriate test cycle set forth in the revised NOx Technical Code 2008, or adversely affect engine durability or reliability; and

ii. that the cost of the approved method is not excessive, which is determined by a comparison of the amount of NOx reduced by the approved method to achieve the standard set forth in suregulation (7)(d) and the cost of purchasing and installing such approved method.

Certification

(8) The revised NOx Technical Code 2008 shall be applied in the certification, testing, and measurement procedures for the standards set forth in this regulation, of the normal operation of the engine.

(9) Defeat devices and irrational emission control strategies undermine this intention and shall not be allowed. The use of auxiliary control devices that are used to protect the engine and/or its ancillary equipment against operating conditions that could result in damage or failure or that are used to facilitate the starting of the engine, are allowed.

Regulation 14. Sulphur Oxides (SOx) and Particulate Matter (PM)

General Requirements

(1) The sulphur content of any fuel oil used on board ships shall not exceed the following limits:

a) 3.50% m/m on and after 1 January 2012; and

b) 0.50% m/m on and after 1 January 2020.

(2) The Company, master, and fuel oil supplier to the ship, shall ensure subregulation (1) is in compliance at all-time following the current date.

Requirements within emission control areas

(3) For the purpose of this regulation, emission control areas as described by the coordinates or areas, in the Convention shall include:

a) the Baltic Sea and the North Sea;

b) the North American area;

c) the United States Caribbean Sea; and

d) any other sea area, including any port area, as designated by the IMO.

(4) While ships are operating within an emission control area, the sulphur content of fuel oil used on board ships shall not exceed the following limits:

a) 0.10% m/m on and after 1 January 2015;

b) Prior to 1 January 2020, the sulphur content of fuel oil referred to in subregulation (4) shall not apply to ships operating in the North American area or the United States Caribbean Sea area defined in subregulation (3), built on or before 1 August 2011 that are powered by propulsion boilers that were not originally designed for continued operation on marine distillate fuel or natural gas.

(5) The sulphur content of fuel oil referred to in subregulation (1) and (4) shall be properly documented by its supplier as required by Regulation 18.

(6) Those ships using separate fuel oils to comply with subregulation (4) and entering or leaving an emission control area set forth in subregulation (3) shall carry a written procedure showing how the fuel oil change-over is to be done, allowing sufficient time for the fuel oil service system to be fully flushed of all fuel oils exceeding the applicable sulphur content specified in subregulation (4) prior to entry into an emission control area. The volume of low sulphur fuel oils in each tank as well as the date, time, and position of the ship when any fuel-oil-change-over operation is completed prior to the entry into an emission control area or commenced after exit from such an area, shall be recorded in such log-book as prescribed by the Director of Marine.

(7) During the first twelve months immediately following entry into force of an amendment designating a specific emission control area under subregulation (3), ships operating in that emission control area are exempt from the requirements in subregulation (4) and (6) and from the requirements of subregulation (5) insofar as they relate to subregulation (4).

Regulation 15. Volatile Organic Compounds (VOC)

(1) A tanker carrying crude oil shall have on board and implement a VOC management plan approved by the Director of Marine. The plan shall be specific to each ship and shall at least:

a) provide written procedures for minimizing VOC emissions during the loading, sea passage and discharge of cargo;

b) record on additional VOC generated by crude oil washing;

c) identify a person responsible for implementing the plan; and

d) for ships on international voyages, at least be written or translated in English language.

Regulation 16. Shipboard Incineration

(1) Except as provided in subregulation (4), shipboard incineration shall be allowed only in a shipboard incinerator.

(2) Shipboard incineration of the following substances shall be prohibited:

a) residues of cargoes or related contaminated packing materials as described in Convention;

b) polychlorinated biphenyls (PCBs);

c) garbage, as defined by Convention, containing more than traces of heavy metals;

d) refined petroleum products containing halogen compounds;

e) sewage sludge and sludge oil either of which are not generated on board the ship; and

f) exhaust gas cleaning system residues.

(3) Shipboard incineration of polyvinyl chlorides (PVCs) is prohibited, except in shipboard incinerator for which IMO's type-approved certified.

(4) Shipboard incineration of sewage sludge and sludge oil generated during normal operation of a ship may also take place in the main or auxiliary power plant or boilers, but in those cases, shall not take place inside ports, harbours and estuaries.

(5) Except as provided in subregulation (6), each incinerator on a ship constructed on or after 1 January 2000 or incinerator that is installed on board a ship on or after 1 January 2000 shall meet the requirements contained in Fifth Schedule. Each incinerator subject to this paragraph shall be approved by the Director of Marine; or

(6) The Director of Marine may allow exclusion from the application of subregulation (5) to any incinerator that is installed on board a Malaysia ship before 19 May 2005, provided that the ship is exclusively engaged in voyages within Malaysia waters.

(7) Incinerators installed in accordance with the requirements of subregulation (6) of this regulation shall be provided with a manufacturer's operating manual which is to be retained with the unit and which shall specify how to operate the incinerator within the limits described in subregulation (2) of Fifth Schedule.

(8) Personnel responsible for the operation of an incinerator installed in accordance with the requirements of subregulation (5) shall be trained to implement the guidance provided in the manufacturer's operating manual as required by subregulation (7) of this regulation.

(9) For incinerators installed in accordance with the requirements of subregulation (5) of this regulation the combustion chamber gas outlet temperature shall be monitored at all times the unit is in operation. Where that incinerator is of the continuous-feed type, waste shall not be fed into the unit when the combustion chamber gas outlet temperature is below 850°C. Where that incinerator is of the batch-loaded type, the unit shall be designed so that the combustion chamber gas outlet temperature shall reach 600°C within five minutes after start-up and will thereafter stabilize at a temperature not less than 850°C.

Regulation 17. Reception Facilities

(1) All reception facilities in Malaysia, if any, shall operate its services, and incorporated in its operational procedure, according to any domestic law and these regulations.

Regulation 18. Fuel Oil Availability and Quality

Fuel Oil Availability

(1) The Director of Marine is entitled to require any ship to─

a) present a record of the actions taken to attempt to achieve compliance; and

b) provide evidence that it attempted to purchase compliant fuel oil in accordance with its voyage plan and, if it was not made available where planned, that attempts were made to locate alternative sources for such fuel oil and that despite best efforts to obtain compliant fuel oil, no such fuel oil was made available for purchase.

(2) The ship should not be required to deviate from its intended voyage or to delay unduly the voyage after in conforming subregulation (1)(b). A ship shall immediately notify the Director of Marine and the competent authority of the relevant port of destination when it cannot purchase compliant fuel oil.

Fuel Oil Quality

(3) Fuel oil for combustion purposes delivered to and used on board ships to which these regulations applies shall meet the following requirements:

a) except as provided in subregulation 3(b):

i. the fuel oil shall be blends of hydrocarbons derived from petroleum refining. This shall not preclude the incorporation of small amounts of additives intended to improve some aspects of performance;

ii. the fuel oil shall be free from inorganic acid; and

iii. the fuel oil shall not include any added substance or chemical waste that jeopardizes the safety of ships or adversely affects the performance of the machinery, or is harmful to personnel, or contributes overall to additional air pollution.

b) fuel oil for combustion purposes derived by methods other than petroleum refining shall not—

i. exceed the applicable sulphur content set forth in Regulation 14;

ii. cause an engine to exceed the applicable NOx emission limit set forth in subregulation (3), (4), (5)(a)(i) and 7(d) of Regulation 13;

iii. contain inorganic acid, or jeopardize the safety of ships or adversely affect the performance of the machinery, or be harmful to personnel, or contribute overall to additional air pollution.

(4) This regulation does not apply to coal in its solid form or nuclear fuels. subregulation (5), (6), (7), and (8) do not apply to gas fuels such as liquefied natural gas, compressed natural gas or liquefied petroleum 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.

(5) For each ship subject to Regulations 5 and 6, 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 Sixth Schedule.

(6) The bunker delivery note shall be kept on board the ship in such a place as to be readily available for inspection at all reasonable times. It shall be retained for a period of three years after the fuel oil has been delivered on board.

(7) The nominated officials or authorized organizations may inspect the bunker delivery notes on board any ship to which these regulations apply while the ship is in its port or offshore terminal, may make a copy of each delivery note, and may require the master or person in charge of the ship to certify that each copy is a true copy of such bunker delivery note.

(8) The bunker delivery note shall be accompanied by a representative sample of the fuel oil delivered. 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.

(9) The Director of Marine may require at any time for the sample as in subregulation (8) be analysed.

PART IV
ENERGY EFFICIENCY FOR SHIPS

Regulation 19. Application

(1) The regulation of Part IV shall apply to all ships of 400 gross tonnage and above.

(2) This regulation may not apply to─

a) Malaysia ships exclusively engaged in voyages within Malaysia waters.

b) ships not propelled by mechanical means, and platforms including FPSOs and FSUs and drilling rigs, regardless of their propulsion.

(3) Regulation 20 and 21 shall not apply to ships which─

a) have non-conventional propulsion, except that Regulation 20 and 21 shall apply to cruise passenger ships having non-conventional propulsion and LNG carriers having conventional or non-conventional propulsion; or

b) delivered on or after 1 September 2019; or

c) cargo ships having ice-breaking capability.

(4) Notwithstanding the provisions of subregulation (1), the Director of Marine may waive the requirement for a ship of 400 gross tonnage and above from complying with regulation 20 and regulation 21 subject to application and justification by the Company.

(5) The provision of subregulation (4) shall not apply to ships of 400 gross tonnage and above:

a) for which the building contract is placed on or after 1 January 2017; or

b) in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2017; or

c) the delivery of which is on or after 1 July 2019; or

d) in cases of a major conversion of a new or existing ship, on or after 1 January 2017, and in which Regulation 5(4)(b) and Regulation 5(4)(c) apply.

Regulation 20. Attained Energy Efficiency Design Index (Attained EEDI)

(1) The attained EEDI shall be calculated for─

a) each new ship;

b) each new ship which has undergone a major conversion; and

c) each new or existing ship which has undergone a major conversion, that is so extensive that the ship is regarded by the Director of Marine as a newly constructed ship,

which falls into one or more of the categories in Seventh Schedule. The attained EEDI shall be specific to each ship and shall indicate the estimated performance of the ship in terms of energy efficiency, and be accompanied by the EEDI technical file that contains the information necessary for the calculation of the attained EEDI and that shows the process of calculation. The attained EEDI shall be verified, based on the EEDI technical file, either by the Director of Marine or by any organization duly authorized.

(2) The attained EEDI shall be calculated taking into account guidelines developed by the IMO.

Regulation 21. Required EEDI

(1) Required EEDI applied for─

a) new ship;

b) new ship which has undergone a major conversion; and

c) new or existing ship which has undergone a major conversion that is so extensive that the ship is regarded by the Director of Marine as a newly constructed ship,

which falls into one of the categories in Seventh Schedule and to which this regulation is applicable, the attained EEDI shall be as follows:

i. Attained EEDI ≤ Required EEDI = (1-X/100) x reference line value; and

ii. where X is the reduction factor specified in table 1 for the required EEDI compared to the EEDI reference line.

(2) For each new and existing ship that has undergone a major conversion which is so extensive that the ship is regarded by the Director of Marine as a newly constructed ship, the attained EEDI shall be calculated and meet the requirement of subregulation (1) with the reduction factor applicable corresponding to the ship type and size of the converted ship at the date of the contract of the conversion, or in the absence of a contract, the commencement date of the conversion.

(3) The Reference line values shall be calculated as described in Seventh Schedule.

(4) If the design of a ship allows it to fall into more than one of the ship type definitions specified in Seventh Schedule, the required EEDI for the ship shall be the most stringent (the lowest) required EEDI.

(5) For each ship to which this regulation applies, the installed propulsion power shall not be less than the propulsion power needed to maintain the manoeuvrability of the ship under adverse conditions as defined in the guidelines to be developed by the IMO.

Regulation 22. Ship Energy Efficiency Management Plan (SEEMP)

(1) Each ship shall keep on board a ship specific Ship Energy Efficiency Management Plan (SEEMP). This may form part of the ship's Safety Management System (SMS).

(2) In the case of a ship of 5,000 gross tonnage and above, the SEEMP shall include a description of the methodology that will be used to collect the data required by Regulation 23. The data for applicable Malaysia ship to be reported to the Director of Marine by the Company.

(3) The SEEMP shall be developed based on latest guidelines by the IMO.

Regulation 23. Collection and Reporting of Ship Fuel Oil Consumption Data

(1) From calendar year 2019, each ship of 5,000 gross tonnage and above shall collect the data specified in Eighth Schedule, for that and each subsequent calendar year or portion thereof, as appropriate, according to the methodology included in the SEEMP.

(2) Except as provided for in subregulation (4), (5) and (6), at the end of each calendar year, the ship shall aggregate the data collected in that calendar year or portion thereof, as appropriate.

(3) Except as provided for in subregulation (4), (5) and (6), within three months after the end of each calendar year, the ship shall report to the Director of Marine or any organization duly authorized, the aggregated value for each datum specified in Eighth Schedule via electronic communication and using a standardized format as developed by the IMO.

(4) In the event of the transfer of a ship from Malaysia flag to another, the ship shall within the period of 14 days before or after the day of completion of the transfer report to the Director of Marine or any organization duly authorized, the aggregated data for the period of the calendar year corresponding as Malaysia flag, as specified in Eighth Schedule, upon prior request of Director of Marine, the disaggregated data.

(5) In the event of a change from one Company to another, the ship shall within the period of 14 days before or after the day of completion of the change report to the Director of Marine or any organization duly authorized, the aggregated data for the period of the calendar year corresponding as to the Company, as specified in Eighth Schedule, upon prior request of Director of Marine, the disaggregated data.

(6) In the event of change from Malaysia flag to another and from one Company to another concurrently, subregulation (4) shall apply.

(7) The data shall be verified according to the procedures established by the Director of Marine, taking into account guidelines developed by the IMO.

(8) Except as provided for in subregulation (4), (5) and (6), the disaggregated data that underlies the reported data noted in Eighth Schedule for the previous calendar year shall be readily accessible for a period of not less than 12 months from the end of that calendar year and be made available to the Director of Marine upon request.

PART V
INSPECTIONS AND OFFENCES

Regulation 24. Inspection

(1) Any ship, when in a port or an offshore terminal under Malaysia water, is subject to inspection by officers duly authorized by the Director of Marine concerning operational requirements either under these regulations or the Convention, where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of air pollution from ships.

(2) In the circumstances given in subregulation (1), the ship shall not sail until the situation has been brought to order in accordance with the requirements of the Convention.

(3) The appointed officers may request the master or Company to furnish further or better evidence of the alleged contravention. If the appointed officers are satisfied after further inquiry, or further investigation, 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 Malaysia law as soon as possible.

(4) Nothing in this regulation shall be construed to limit the rights and obligations of the Director of Marine carrying out control over operational requirements specifically provided for in the present Convention.

(5) In relation to Part IV, any inspection shall be limited to verifying, when appropriate, that there is at least a valid Statement of Compliance related to fuel oil consumption reporting and International Energy Efficiency Certificate on board, as related.

(6) After such inspection, a ship must not proceed to sea from a Malaysia port unless─

a) the International Air Pollution Prevention in respect of that ship is valid,

b) the International Energy Efficiency Certificate in respect of that ship is valid,

c) the Statement of Compliance in respect of that ship is reasonably updated in accordance to the ship's operational activity, and

d) the surveyor or authorized officers duly appointed by the Director of Marine has permitted the ship to proceed to sea without presenting an unreasonable threat of harm to the marine environment in fulfilment of any provisions stated in these regulations of Part III and Part IV.

Regulation 25. Offence

(1) The Director of Marine may revoke an appropriate certificate or statement issued in respect of a Malaysia ship to which these regulations apply, where he has reason to believe that─

a) the appropriate certificate was issued on false or erroneous information; or

b) since the completion of any survey or verification required by these Regulations, absence of any required record or, equipment or machinery has sustained damaged, or otherwise found deficient.

(2) Any person, Master, or Company who contravenes any provisions of these regulations shall be guilty of an offence, where no other penalty is provided, be liable on conviction to a fine not exceeding fifty thousand ringgit or to imprisonment for a term not exceeding one year or to both.

FIRST SCHEDULE

INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

Issued under the provisions of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, and as amended by resolution MEPC.132(53), (hereinafter referred to as "the Convention") under the authority of the Government of:

. . . . . .

(Full designation of the country)

by. . . . . .

(Full designation of the competent person or organization authorized under the provisions of the Convention)

Particulars of ship*

Name of ship . . . . . .

Distinctive number or letters . . . . . .

Port of registry . . . . . .

Gross tonnage . . . . . .

IMO Number†. . . . . .

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* Alternatively, the particulars of the ship may be placed horizontally in boxes.

† In accordance with IMO ship identification number scheme adopted by the Organization by resolution A.600(15).

Type of ship:

tanker ☐

ship other than a tanker ☐

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with regulation 5 of Annex VI of the Convention; and

2 That the survey shows that the equipment, systems, fittings, arrangements and material fully comply with the applicable requirements of Annex VI of the Convention.

Completion date of survey on which this Certificate is based:. . . . .(dd/mm/yyyy)

This Certificate is valid until . . . .* subject to surveys in accordance with regulation 5 of Annex VI of the Convention.

Issued at. . . . .
(Place of issue of certificate)

(dd/mm/yyyy): . . . . . *(Date of issue)*

. . . .
(Signature of authorized official issuing the certificate)

(Seal or stamp of the authority, as appropriate)

* Insert the date of expiry as specified by the Administration in accordance with regulation 9(1) of Annex VI of the Convention. The day and the month of this date correspond to the anniversary date as defined in regulation 2(14) of Annex VI of the Convention, unless amended in accordance with regulation 9(8) of Annex VI of the Convention.

Endorsement for annual and intermediate surveys

THIS IS TO CERTIFY that at a survey required by regulation 5 of Annex VI of the Convention the ship was found to comply with the relevant provisions of the Convention:

Annual survey:

Signed:. . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy):. . . . . .

(Seal or stamp of the authority, as appropriate)

Annual/Intermediate* survey:

Signed:. . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy):. . . . . .

(Seal or stamp of the authority, as appropriate)

Annual/Intermediate* survey:

Signed:. . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy):. . . . . .

(Seal or stamp of the authority, as appropriate)

Annual survey:

Signed:. . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy):. . . . . .

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

Annual/intermediate survey in accordance with regulation 9(8)(c)

THIS IS TO CERTIFY that, at an annual/intermediate* survey in accordance with regulation 9(8)(c) of Annex VI of the Convention, the ship was found to comply with the relevant provisions of the Convention:

Signed:. . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy):. . . . . .

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the certificate if valid for less than 5 years where regulation 9(3) applies

The ship complies with the relevant provisions of the Convention, and this certificate shall, in accordance with regulation 9(3) of Annex VI of the Convention, be accepted as valid until (dd/mm/yyyy): . . . . . .

Signed:. . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy):. . . . . .

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey has been completed and regulation 9(4) applies

The ship complies with the relevant provisions of the Convention, and this certificate shall, in accordance with regulation 9(4) of Annex VI of the Convention, be accepted as valid until (dd/mm/yyyy): . . . . . .

Signed:. . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy):. . . . . .

(Seal or stamp of the authority, as appropriate)

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* Delete as appropriate.

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation 9(5) or 9(6) applies

This certificate shall, in accordance with regulation 9(5) or 9(6)* of Annex VI of the Convention, be accepted as valid until (dd/mm/yyyy): . . . . . .

Signed: . . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy): . . . . . .

(Seal or stamp of the authority, as appropriate)

Endorsement for advancement of anniversary date where regulation 9(8) applies

In accordance with regulation 9(8) of Annex VI of the Convention, the new anniversary date is (dd/mm/yyyy): . . . . . .

Signed: . . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy): . . . . . .

(Seal or stamp of the authority, as appropriate)

In accordance with regulation 9(8) of Annex VI of the Convention, the new anniversary date is (dd/mm/yyyy): . . . . . .

Signed: . . . . . .
(signature of authorized official)

Place: . . . . . .

Date (dd/mm/yyyy): . . . . . .

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

SUPPLEMENT TO
INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE
(IAPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT

In respect of the provisions of Annex VI of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (hereinafter referred to as ''the Convention'').

Notes:

1 This Record shall be permanently attached to the IAPP Certificate. The IAPP Certificate shall be available on board the ship at all times.

2 The Record shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.

3 Entries in boxes shall be made by inserting either a cross (**x**) for the answer ''yes'' and ''applicable'' or a (–) for the answers ''no'' and ''not applicable'' as appropriate.

4 Unless otherwise stated, regulations mentioned in this Record refer to regulations of Annex VI of the Convention and resolutions or circulars refer to those adopted by the International Maritime Organization.

1 Particulars of ship

1.1 Name of ship . . . . . .

1.2 Distinctive number or letters . . . . . .

1.3 IMO number . . . . . .

1.4 Port of registry . . . . . .

1.5 Gross tonnage . . . . . .

1.6 Date on which keel was laid or ship was at a similar stage of construction . . . . . .

1.7 Date of commencement of major engine conversion (if applicable) (regulation 13): . . . . . .

2 Control of emissions from ships

2.1 *Ozone-depleting substances (regulation 12)*

2.1.1 The following fire-extinguishing systems and equipment containing halons may continue in service: . . . . . ☐

System equipment	Location on board

2.1.2 The following systems and equipment containing CFCs may continue in service: . . . . . ☐

System equipment	Location on board

2.1.3 The following systems containing hydro-chlorofluorocarbons (HCFCs) installed before 1 January 2020 may continue in service: . . . . . ☐

System equipment	Location on board

2.2 *Nitrogen oxides (NO_x) (regulation 13)*

2.2.1 The following diesel engines with power output greater than 130 kW, and installed on a ship constructed on or after 1 January 2000, comply with the emission standards of regulation 13(3)(a) in accordance with the NO_x Technical Code: . . . . . ☐

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)

2.2.2 The following diesel engines with power output greater than 130 kW, and which underwent major conversion per regulation 13(2) on or after 1 January 2000, comply with the emission standards of regulation 13(3)(a) in accordance with the NO_x Technical Code:. . . . . ☐

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)

2.2.3 The following diesel engines with a power output greater than 130 kW and installed on a ship constructed on or after 1 January 2000, or with a power output greater than 130 kW and which underwent major conversion per regulation 13(2) on or after 1 January 2000, are fitted with an exhaust gas cleaning system or other equivalent methods in accordance with regulation 13(3), and the NO_x Technical Code: . . . . . ☐

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)

2.2.4 The following diesel engines from 2.2.1, 2.2.2 and 2.2.3 above are fitted with NO_x emission monitoring and recording devices in accordance with the NO_x Technical Code: . . . . . ☐

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)

2.3 *Sulphur oxides (SO_x) (regulation 14)*

2.3.1 When the ship operates within an SO_x emission control area specified in regulation 14(3), the ship uses:

.1 fuel oil with a sulphur content that does not exceed 1.5% m/m as documented by bunker delivery notes; or ☐

.2 an approved exhaust gas cleaning system to reduce SO_x emissions below 6.0 g SO_x/kW·h; or ☐

.3 other approved technology to reduce SO_x emissions below 6.0 g SO_x/kW·h ☐

2.4 *Volatile organic compounds (VOCs) (regulation 15)*

2.4.1 The tanker has a vapour collection system installed and approved in accordance with MSC/Circ.585 ☐

2.5 The ship has an incinerator:

.1 which complies with resolution MEPC.76(40) as amended ☐

.2 installed before 1 January 2000 which does not comply with resolution MEPC.76(40) as amended ☐

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at . . . .

(Place of issue of the Record)

(dd/mm/yyyy): . . . .

Date of issue *(Signature of duly authorized official issuing the Record)*

(Seal or stamp of the authority, as appropriate)

IEEC : XXXX/20XX/XXXX

GOVERNMENT OF MALAYSIA

INTERNATIONAL ENERGY EFFICIENCY CERTIFICATE

Issued under the provisions of the Protocol of 1997, as amended by resolution MEPC.203(62), to amend the International Convention for the Prevention of Pollution by Ships, 1973, as modified by the Protocol of 1978 related thereto (hereinafter referred to as "the Convention") under the authority of the Government of:

MALAYSIA

By **Surveyor General of Malaysia**

Particulars of ship

Name of ship	**<ship name>**
Distinctive number or letters	**<official number>**
Port of registry	**<port of registry>**
Gross tonnage	**<gross tonnage>**
IMO Number	**<IMO number>**

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with regulation 5.4 of Annex VI of the Convention; and

2 That the survey shows that the ship complies with the applicable requirements in regulation 22.

Completion date of survey on which this Certificate is based: **<day> <month> <year>**

Issued at **Port Kelang** on **<day> <month> <year>**

(**<signature's name>**)
Surveyor General of Ships
Malaysia

Note:
<additional remarks>

GOVERNMENT OF MALAYSIA

Supplement to the International Energy Efficiency Certificate
(IEE Certificate)

RECORD OF CONSTRUCTION RELATING TO ENERGY EFFICIENCY

Notes:

1 This Record shall be permanently attached to the IEE Certificate. The IEE Certificate shall be available on board the ship at all times.

2 The Record shall be at least in English, French or Spanish. If an official language of the issuing Party is also used, this shall prevail in case of a dispute or discrepancy.

3 Entries in boxes shall be made by inserting either: a cross (x) for the answers "yes" and "applicable"; or a dash (-) for the answers "no" and "not applicable", as appropriate.

4 Unless otherwise stated, regulations mentioned in this Record refer to regulations in Annex VI of the Convention, and resolutions or circulars refer to those adopted by the International Maritime Organization.

1 Particulars of ship

1.1	Name of ship	**<ship name>**
1.2	IMO number	**<IMO number>**
1.3	Date of **<building contract/keel laid>**	**<day> <month> <year>**
1.4	Gross tonnage	**<gross tonnage>**
1.5	Deadweight	**<deadweight>**
1.6	Type of ship	**<ship type>**

2 Propulsion system

2.1 Diesel propulsion ..... ☐

2.2 Diesel-electric propulsion ..... ☐

2.3 Turbine propulsion ..... ☐

2.4 Hybrid propulsion ..... ☐

2.5 Propulsion system other than any of the above ..... ☐

3 Attained Energy Efficiency Design Index (EEDI)

3.1 The Attained EEDI in accordance with regulation 20.1 is calculated based on the information contained in the EEDI technical file which also shows the process of calculating the Attained EEDI……..... ☐

The Attained EEDI is: grams-CO2/tonne-mile

3.2 The Attained EEDI is not calculated as:

3.2.1 the ship is exempt under regulation 20.1 as it is not a new ship as defined in regulation 2.23 ..... ☐

3.2.2 the type of propulsion system is exempt in accordance with regulation 19.3 ..... ☐

3.2.3 the requirement of regulation 20 is waived by the ship's Administration in accordance with regulation 19.4 ..... ☐

3.2.4 the type of ship is exempt in accordance with regulation 20.1 ..... ☐

4 Required EEDI

4.1 Required EEDI is: grams-CO2/tonne-mile

4.2 The required EEDI is not applicable as:

4.2.1 the ship is exempt under regulation 21.1 as it is not a new ship as defined in regulation 2.23 ..... ☐

4.2.2 the type of propulsion system is exempt in accordance with regulation 19.3 …..... ☐

4.2.3 the requirement of regulation 21 is waived by the ship's Administration in accordance with regulation 19.4 ..... ☐

4.2.4 the type of ship is exempt in accordance with regulation 21.1 …..... ☐

4.2.5 the ship's capacity is below the minimum capacity threshold in Table 1 of regulation 21.2 ..... ☐

5 Ship Energy Efficiency Management Plan

5.1 The ship is provided with a Ship Energy Efficiency Management Plan (SEEMP) in compliance with regulation 22 .....☐

6 EEDI technical file

6.1 The IEE Certificate is accompanied by the EEDI technical file in compliance with regulation 20.1 ..... ☐

6.2 The EEDI technical file identification/verification number .....

6.3 The EEDI technical file verification date .....

****

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at **Port Kelang**

<day> <month> <year>

(<**signature's name>**)
Surveyor General of Ships
Malaysia

THIRD SCHEDULE

SOC: XXXX/20XX/XXXX

GOVERNMENT OF MALAYSIA

STATEMENT OF COMPLIANCE

Issued under the provisions of the Protocol of 1997, as amended, to amend the International Convention for the Prevention of Pollution by Ships, 1973, as modified by the Protocol of 1978 related thereto (hereinafter referred to as "the Convention") under the authority of the Government of:

MALAYSIA

By **Surveyor General of Malaysia**

Particulars of ship

Name of ship	**<ship name>**
Distinctive number or letters	**<official number>**
IMO Number	**<IMO number>**
Port of registry	**<Port of Registry>**
Gross tonnage	**<gross tonnage>**

THIS IS TO DECLARE:

1 That the ship has submitted to this Administration the data required by regulation 22A of Annex VI of the Convention, covering ship operations from *(dd/mm/yyyy)* through *(dd/mm/yyyy); and*

2 The data was collected and reported in accordance with the methodology and processes set out in the ship's SEEMP that was in effect over the period from *(dd/mm/yyyy)* through *(dd/mm/yyyy).*

This Statement of Compliance is valid until: **<day> <month> <year>**

Issued at **Port Kelang**

Date **<day> <month> <year>**

(**<name>**)
Surveyor General of Ships
Malaysia

Note:
<additional remarks>

EMISSION CONTROL AREA

1. The boundaries of emission control areas designated under Convention, other than the Baltic Sea and the North Sea areas, are set forth in this appendix.

2. The North American area comprises:

a) the sea area located off the Pacific coasts of the United States and Canada, enclosed by geodesic lines connecting the following coordinates:

POINT	LATITUDE	LONGITUDE
1	32º 32′ 10″ N.	117º 06′ 11″ W.
2	32º 32′ 04″ N.	117º 07′ 29″ W.
3	32º 31′ 39″ N.	117º 14′ 20″ W.
4	32º 33′ 13″ N.	117º 15′ 50″ W.
5	32º 34′ 21″ N.	117º 22′ 01″ W.
6	32º 35′ 23″ N.	117º 27′ 53″ W.
7	32º 37′ 38″ N.	117º 49′ 34″ W.
8	31º 07′ 59″ N.	118º 36′ 21″ W.
9	30º 33′ 25″ N.	121º 47′ 29″ W.
10	31º 46′ 11″ N.	123º 17′ 22″ W.
11	32º 21′ 58″ N.	123º 50′ 44″ W.
12	32º 56′ 39″ N.	124º 11′ 47″ W.
13	33º 40′ 12″ N.	124º 27′ 15″ W.
14	34º 31′ 28″ N.	125º 16′ 52″ W.
15	35º 14′ 38″ N.	125º 43′ 23″ W.
16	35º 43′ 60″ N.	126º 18′ 53″ W.
17	36º 16′ 25″ N.	126º 45′ 30″ W.
18	37º 01′ 35″ N.	127º 07′ 18″ W.
19	37º 45′ 39″ N.	127º 38′ 02″ W.
20	38º 25′ 08″ N.	127º 52′ 60″ W.
21	39º 25′ 05″ N.	128º 31′ 23″ W.
22	40º 18′ 47″ N.	128º 45′ 46″ W.
23	41º 13′ 39″ N.	128º 40′ 22″ W.
24	42º 12′ 49″ N.	129º 00′ 38″ W.
25	42º 47′ 34″ N.	129º 05′ 42″ W.
26	43º 26′ 22″ N.	129º 01′ 26″ W.
27	44º 24′ 43″ N.	128º 41′ 23″ W.
28	45º 30′ 43″ N.	128º 40′ 02″ W.

29	46º 11′ 01″ N.	128º 49′ 01″ W.
30	46º 33′ 55″ N.	129º 04′ 29″ W.
31	47º 39′ 55″ N.	131º 15′ 41″ W.
32	48º 32′ 32″ N.	132º 41′ 00″ W.
33	48º 57′ 47″ N.	133º 14′ 47″ W.
34	49º 22′ 39″ N.	134º 15′ 51″ W.
35	50º 01′ 52″ N.	135º 19′ 01″ W.
36	51º 03′ 18″ N.	136º 45′ 45″ W.
37	51º 54′ 04″ N.	137º 41′ 54″ W.
38	52º 45′ 12″ N.	138º 20′ 14″ W.
39	53º 29′ 20″ N.	138º 40′ 36″ W.
40	53º 40′ 39″ N.	138º 48′ 53″ W.
41	54º 13′ 45″ N.	139º 32′ 38″ W.
42	54º 39′ 25″ N.	139º 56′ 19″ W.
43	55º 20′ 18″ N.	140º 55′ 45″ W.
44	56º 07′ 12″ N.	141º 36′ 18″ W.
45	56º 28′ 32″ N.	142º 17′ 19″ W.
46	56º 37′ 19″ N.	142º 48′ 57″ W.
47	58º 51′ 04″ N.	153º 15′ 03″ W.

b) the sea areas located off the Atlantic coasts of the United States, Canada, and France (Saint-Pierre-et-Miquelon) and the Gulf of Mexico coast of the United States enclosed by geodesic lines connecting the following coordinates:

POINT	**LATITUDE**	**LONGITUDE**
1	60º 00′ 00″ N.	64º 09′ 36″ W.
2	60º 00′ 00″ N.	56º 43′ 00″ W.
3	58º 54′ 01″ N.	55º 38′ 05″ W.
4	57º 50′ 52″ N.	55º 03′ 47″ W.
5	57º 35′ 13″ N.	54º 00′ 59″ W.
6	57º 14′ 20″ N.	53º 07′ 58″ W.
7	56º 48′ 09″ N.	52º 23′ 29″ W.
8	56º 18′ 13″ N.	51º 49′ 42″ W.
9	54º 23′ 21″ N.	50º 17′ 44″ W.
10	53º 44′ 54″ N.	50º 07′ 17″ W.
11	53º 04′ 59″ N.	50º 10′ 05″ W.

12	52º 20′ 06″ N.	49º 57′ 09″ W.
13	51º 34′ 20″ N.	48º 52′ 45″ W.
14	50º 40′ 15″ N.	48º 16′ 04″ W.
15	50º 02′ 28″ N.	48º 07′ 03″ W.
16	49º 24′ 03″ N.	48º 09′ 35″ W.
17	48º 39′ 22″ N.	47º 55′ 17″ W.
18	47º 24′ 25″ N.	47º 46′ 56″ W.
19	46º 35′ 12″ N.	48º 00′ 54″ W.
20	45º 19′ 45″ N.	48º 43′ 28″ W.
21	44º 43′ 38″ N.	49º 16′ 50″ W.
22	44º 16′ 38″ N.	49º 51′ 23″ W.
23	43º 53′ 15″ N.	50º 34′ 01″ W.
24	43º 36′ 06″ N.	51º 20′ 41″ W.
25	43º 23′ 59″ N.	52º 17′ 22″ W.
26	43º 19′ 50″ N.	53º 20′ 13″ W.
27	43º 21′ 14″ N.	54º 09′ 20″ W.
28	43º 29′ 41″ N.	55º 07′ 41″ W.
29	42º 40′ 12″ N.	55º 31′ 44″ W.
30	41º 58′ 19″ N.	56º 09′ 34″ W.
31	41º 20′ 21″ N.	57º 05′ 13″ W.
32	40º 55′ 34″ N.	58º 02′ 55″ W.
33	40º 41′ 38″ N.	59º 05′ 18″ W.
34	40º 38′ 33″ N.	60º 12′ 20″ W.
35	40º 45′ 46″ N.	61º 14′ 03″ W.
36	41º 04′ 52″ N.	62º 17′ 49″ W.
37	40º 36′ 55″ N.	63º 10′ 49″ W.
38	40º 17′ 32″ N.	64º 08′ 37″ W.
39	40º 07′ 46″ N.	64º 59′ 31″ W.
40	40º 05′ 44″ N.	65º 53′ 07″ W.
41	39º 58′ 05″ N.	65º 59′ 51″ W.
42	39º 28′ 24″ N.	66º 21′ 14″ W.
43	39º 01′ 54″ N.	66º 48′ 33″ W.
44	38º 39′ 16″ N.	67º 20′ 59″ W.
45	38º 19′ 20″ N.	68º 02′ 01″ W.
46	38º 05′ 29″ N.	68º 46′ 55″ W.
47	37º 58′ 14″ N.	69º 34′ 07″ W.
48	37º 57′ 47″ N.	70º 24′ 09″ W.

49	37º 52′ 46″ N.	70º 37′ 50″ W.
50	37º 18′ 37″ N.	71º 08′ 33″ W.
51	36º 32′ 25″ N.	71º 33′ 59″ W.
52	35º 34′ 58″ N.	71º 26′ 02″ W.
53	34º 33′ 10″ N.	71º 37′ 04″ W.
54	33º 54′ 49″ N.	71º 52′ 35″ W.
55	33º 19′ 23″ N.	72º 17′ 12″ W.
56	32º 45′ 31″ N.	72º 54′ 05″ W.
57	31º 55′ 13″ N.	74º 12′ 02″ W.
58	31º 27′ 14″ N.	75º 15′ 20″ W.
59	31º 03′ 16″ N.	75º 51′ 18″ W.
60	30º 45′ 42″ N.	76º 31′ 38″ W.
61	30º 12′ 48″ N.	77º 18′ 29″ W.
62	29º 25′ 17″ N.	76º 56′ 42″ W.
63	28º 36′ 59″ N.	76º 47′ 60″ W.
64	28º 17′ 13″ N.	76º 40′ 10″ W.
65	28º 17′ 12″ N.	79º 11′ 23″ W.
66	27º 52′ 56″ N.	79º 28′ 35″ W.
67	27º 26′ 01″ N.	79º 31′ 38″ W.
68	27º 16′ 13″ N.	79º 34′ 18″ W.
69	27º 11′ 54″ N.	79º 34′ 56″ W.
70	27º 05′ 59″ N.	79º 35′ 19″ W.
71	27º 00′ 28″ N.	79º 35′ 17″ W.
72	26º 55′ 16″ N.	79º 34′ 39″ W.
73	26º 53′ 58″ N.	79º 34′ 27″ W.
74	26º 45′ 46″ N.	79º 32′ 41″ W.
75	26º 44′ 30″ N.	79º 32′ 23″ W.
76	26º 43′ 40″ N.	79º 32′ 20″ W.
77	26º 41′ 12″ N.	79º 32′ 01″ W.
78	26º 38′ 13″ N.	79º 31′ 32″ W.
79	26º 36′ 30″ N.	79º 31′ 06″ W.
80	26º 35′ 21″ N.	79º 30′ 50″ W.
81	26º 34′ 51″ N.	79º 30′ 46″ W.
82	26º 34′ 11″ N.	79º 30′ 38″ W.
83	26º 31′ 12″ N.	79º 30′ 15″ W.
84	26º 29′ 05″ N.	79º 29′ 53″ W.
85	26º 25′ 31″ N.	79º 29′ 58″ W.

86	26º 23′ 29″ N.	79º 29′ 55″ W.
87	26º 23′ 21″ N.	79º 29′ 54″ W.
88	26º 18′ 57″ N.	79º 31′ 55″ W.
89	26º 15′ 26″ N.	79º 33′ 17″ W.
90	26º 15′ 13″ N.	79º 33′ 23″ W.
91	26º 08′ 09″ N.	79º 35′ 53″ W.
92	26º 07′ 47″ N.	79º 36′ 09″ W.
93	26º 06′ 59″ N.	79º 36′ 35″ W.
94	26º 02′ 52″ N.	79º 38′ 22″ W.
95	25º 59′ 30″ N.	79º 40′ 03″ W.
96	25º 59′ 16″ N.	79º 40′ 08″ W.
97	25º 57′ 48″ N.	79º 40′ 38″ W.
98	25º 56′ 18″ N.	79º 41′ 06″ W.
99	25º 54′ 04″ N.	79º 41′ 38″ W.
100	25º 53′ 24″ N.	79º 41′ 46″ W.
101	25º 51′ 54″ N.	79º 41′ 59″ W.
102	25º 49′ 33″ N.	79º 42′ 16″ W.
103	25º 48′ 24″ N.	79º 42′ 23″ W.
104	25º 48′ 20″ N.	79º 42′ 24″ W.
105	25º 46′ 26″ N.	79º 42′ 44″ W.
106	25º 46′ 16″ N.	79º 42′ 45″ W.
107	25º 43′ 40″ N.	79º 42′ 59″ W.
108	25º 42′ 31″ N.	79º 42′ 48″ W.
109	25º 40′ 37″ N.	79º 42′ 27″ W.
110	25º 37′ 24″ N.	79º 42′ 27″ W.
111	25º 37′ 08″ N.	79º 42′ 27″ W.
112	25º 31′ 03″ N.	79º 42′ 12″ W.
113	25º 27′ 59″ N.	79º 42′ 11″ W.
114	25º 24′ 04″ N.	79º 42′ 12″ W.
115	25º 22′ 21″ N.	79º 42′ 20″ W.
116	25º 21′ 29″ N.	79º 42′ 08″ W.
117	25º 16′ 52″ N.	79º 41′ 24″ W.
118	25º 15′ 57″ N.	79º 41′ 31″ W.
119	25º 10′ 39″ N.	79º 41′ 31″ W.
120	25º 09′ 51″ N.	79º 41′ 36″ W.
121	25º 09′ 03″ N.	79º 41′ 45″ W.
122	25º 03′ 55″ N.	79º 42′ 29″ W.

123	25º 02′ 60″ N.	79º 42′ 56″ W.
124	25º 00′ 30″ N.	79º 44′ 05″ W.
125	24º 59′ 03″ N.	79º 44′ 48″ W.
126	24º 55′ 28″ N.	79º 45′ 57″ W.
127	24º 44′ 18″ N.	79º 49′ 24″ W.
128	24º 43′ 04″ N.	79º 49′ 38″ W.
129	24º 42′ 36″ N.	79º 50′ 50″ W.
130	24º 41′ 47″ N.	79º 52′ 57″ W.
131	24º 38′ 32″ N.	79º 59′ 58″ W.
132	24º 36′ 27″ N.	80º 03′ 51″ W.
133	24º 33′ 18″ N.	80º 12′ 43″ W.
134	24º 33′ 05″ N.	80º 13′ 21″ W.
135	24º 32′ 13″ N.	80º 15′ 16″ W.
136	24º 31′ 27″ N.	80º 16′ 55″ W.
137	24º 30′ 57″ N.	80º 17′ 47″ W.
138	24º 30′ 14″ N.	80º 19′ 21″ W.
139	24º 30′ 06″ N.	80º 19′ 44″ W.
140	24º 29′ 38″ N.	80º 21′ 05″ W.
141	24º 28′ 18″ N.	80º 24′ 35″ W.
142	24º 28′ 06″ N.	80º 25′ 10″ W.
143	24º 27′ 23″ N.	80º 27′ 20″ W.
144	24º 26′ 30″ N.	80º 29′ 30″ W.
145	24º 25′ 07″ N.	80º 32′ 22″ W.
146	24º 23′ 30″ N.	80º 36′ 09″ W.
147	24º 22′ 33″ N.	80º 38′ 56″ W.
148	24º 22′ 07″ N.	80º 39′ 51″ W.
149	24º 19′ 31″ N.	80º 45′ 21″ W.
150	24º 19′ 16″ N.	80º 45′ 47″ W.
151	24º 18′ 38″ N.	80º 46′ 49″ W.
152	24º 18′ 35″ N.	80º 46′ 54″ W.
153	24º 09′ 51″ N.	80º 59′ 47″ W.
154	24º 09′ 48″ N.	80º 59′ 51″ W.
155	24º 08′ 58″ N.	81º 01′ 07″ W.
156	24º 08′ 30″ N.	81º 01′ 51″ W.
157	24º 08′ 26″ N.	81º 01′ 57″ W.
158	24º 07′ 28″ N.	81º 03′ 06″ W.
159	24º 02′ 20″ N.	81º 09′ 05″ W.

160	23º 59′ 60″ N.	81º 11′ 16″ W.
161	23º 55′ 32″ N.	81º 12′ 55″ W.
162	23º 53′ 52″ N.	81º 19′ 43″ W.
163	23º 50′ 52″ N.	81º 29′ 59″ W.
164	23º 50′ 02″ N.	81º 39′ 59″ W.
165	23º 49′ 05″ N.	81º 49′ 59″ W.
166	23º 49′ 05″ N.	82º 00′ 11″ W.
167	23º 49′ 42″ N.	82º 09′ 59″ W
168	23º 51′ 14″ N.	82º 24′ 59″ W.
169	23º 51′ 14″ N.	82º 39′ 59″ W.
170	23º 49′ 42″ N.	82º 48′ 53″ W.
171	23º 49′ 32″ N.	82º 51′ 11″ W.
172	23º 49′ 24″ N.	82º 59′ 59″ W.
173	23º 49′ 52″ N.	83º 14′ 59″ W.
174	23º 51′ 22″ N.	83º 25′ 49″ W.
175	23º 52′ 27″ N.	83º 33′ 01″ W.
176	23º 54′ 04″ N.	83º 41′ 35″ W.
177	23º 55′ 47″ N.	83º 48′ 11″ W.
178	23º 58′ 38″ N.	83º 59′ 59″ W.
179	24º 09′ 37″ N.	84º 29′ 27″ W.
180	24º 13′ 20″ N.	84º 38′ 39″ W.
181	24º 16′ 41″ N.	84º 46′ 07″ W.
182	24º 23′ 30″ N.	84º 59′ 59″ W.
183	24º 26′ 37″ N.	85º 06′ 19″ W.
184	24º 38′ 57″ N.	85º 31′ 54″ W.
185	24º 44′ 17″ N.	85º 43′ 11″ W.
186	24º 53′ 57″ N.	85º 59′ 59″ W.
187	25º 10′ 44″ N.	86º 30′ 07″ W.
188	25º 43′ 15″ N.	86º 21′ 14″ W.
189	26º 13′ 13″ N.	86º 06′ 45″ W.
190	26º 27′ 22″ N.	86º 13′ 15″ W.
191	26º 33′ 46″ N.	86º 37′ 07″ W.
192	26º 01′ 24″ N.	87º 29′ 35″ W.
193	25º 42′ 25″ N.	88º 33′ 00″ W.
194	25º 46′ 54″ N.	90º 29′ 41″ W.
195	25º 44′ 39″ N.	90º 47′ 05″ W.
196	25º 51′ 43″ N.	91º 52′ 50″ W.

197	26º 17′ 44″ N.	93º 03′ 59″ W.
198	25º 59′ 55″ N.	93º 33′ 52″ W.
199	26º 00′ 32″ N.	95º 39′ 27″ W.
200	26º 00′ 33″ N.	96º 48′ 30″ W.
201	25º 58′ 32″ N.	96º 55′ 28″ W.
202	25º 58′ 15″ N.	96º 58′ 41″ W.
203	25º 57′ 58″ N.	97º 01′ 54″ W.
204	25º 57′ 41″ N.	97º 05′ 08″ W.
205	25º 57′ 24″ N.	97º 08′ 21″ W.
206	25º 57′ 24″ N.	97º 08′ 47″ W.

c) the sea area located off the coasts of the Hawaiian Islands of Hawai´i, Maui, Oahu, Moloka´i, Ni´ihau, Kaua´i, Lāna´i, and Kaho´olawe, enclosed by geodesic lines connecting the following coordinates:

POINT	LATITUDE	LONGITUDE
1	22º 32′ 54″ N.	153º 00′ 33″ W.
2	23º 06′ 05″ N.	153º 28′ 36″ W.
3	23º 32′ 11″ N.	154º 02′ 12″ W.
4	23º 51′ 47″ N.	154º 36′ 48″ W.
5	24º 21′ 49″ N.	155º 51′ 13″ W.
6	24º 41′ 47″ N.	156º 27′ 27″ W.
7	24º 57′ 33″ N.	157º 22′ 17″ W.
8	25º 13′ 41″ N.	157º 54′ 13″ W.
9	25º 25′ 31″ N.	158º 30′ 36″ W.
10	25º 31′ 19″ N.	159º 09′ 47″ W.
11	25º 30′ 31″ N.	159º 54′ 21″ W.
12	25º 21′ 53″ N.	160º 39′ 53″ W.
13	25º 00′ 06″ N.	161º 38′ 33″ W.
14	24º 40′ 49″ N.	162º 13′ 13″ W.
15	24º 15′ 53″ N.	162º 43′ 08″ W.
16	23º 40′ 50″ N.	163º 13′ 00″ W.
17	23º 03′ 20″ N.	163º 32′ 58″ W.
18	22º 20′ 09″ N.	163º 44′ 41″ W.
19	21º 36′ 45″ N.	163º 46′ 03″ W.
20	20º 55′ 26″ N.	163º 37′ 44″ W.

21	20º 13′ 34″ N.	163º 19′ 13″ W.
22	19º 39′ 03″ N.	162º 53′ 48″ W.
23	19º 09′ 43″ N.	162º 20′ 35″ W.
24	18º 39′ 16″ N.	161º 19′ 14″ W.
25	18º 30′ 31″ N.	160º 38′ 30″ W.
26	18º 29′ 31″ N.	159º 56′ 17″ W.
27	18º 10′ 41″ N.	159º 14′ 08″ W.
28	17º 31′ 17″ N.	158º 56′ 55″ W.
29	16º 54′ 06″ N.	158º 30′ 29″ W.
30	16º 25′ 49″ N.	157º 59′ 25″ W.
31	15º 59′ 57″ N.	157º 17′ 35″ W.
32	15º 40′ 37″ N.	156º 21′ 06″ W.
33	15º 37′ 36″ N.	155º 22′ 16″ W.
34	15º 43′ 46″ N.	154º 46′ 37″ W.
35	15º 55′ 32″ N.	154º 13′ 05″ W.
36	16º 46′ 27″ N.	152º 49′ 11″ W.
37	17º 33′ 42″ N.	152º 00′ 32″ W.
38	18º 30′ 16″ N.	151º 30′ 24″ W.
39	19º 02′ 47″ N.	151º 22′ 17″ W.
40	19º 34′ 46″ N.	151º 19′ 47″ W.
41	20º 07′ 42″ N.	151º 22′ 58″ W.
42	20º 38′ 43″ N.	151º 31′ 36″ W.
43	21º 29′ 09″ N.	151º 59′ 50″ W.
44	22º 06′ 58″ N.	152º 31′ 25″ W.
45	22º 32′ 54″ N	153º 00′ 33″ W

3. The United States Caribbean Sea area includes:

a) the sea area located off the Atlantic and Caribbean coasts of the Commonwealth of Puerto Rico and the United States Virgin Islands, enclosed by geodesic lines connecting the following coordinates:

POINT	LATITUDE	LONGITUDE		POINT	LATITUDE	LONGITUDE
1	17º 18′ 37″ N.	67º 32′ 14″ W.		28	18º 22′ 22″ N.	64º 40′ 60″ W.
2	19º 11′ 14″ N.	67º 26′ 45″ W.		29	18º 21′ 57″ N.	64º 40′ 15″ W.

3	19º 30′ 28″ N.	65º 16′ 48″ W.		30	18º 21′ 51″ N.	64º 38′ 23″ W.
4	19º 12′ 25″ N. .	65º 6′ 8″ W.		31	18º 21′ 22″ N.	64º 38′ 16″ W.
5	18º 45′ 13″ N.	65º 0′ 22″ W.		32	18º 20′ 39″ N.	64º 38′ 33″ W.
6	18º 41′ 14″ N.	64º 59′ 33″ W.		33	18º 19′ 15″ N.	64º 38′ 14″ W.
7	18º 29′ 22″ N.	64º 53′ 51″ W.		34	18º 19′ 7″ N.	64º 38′ 16″ W.
8	18º 27′ 35″ N.	64º 53′ 22″ W.		35	18º 17′ 23″ N.	64º 39′ 38″ W.
9	18º 25′ 21″ N.	64º 52′ 39″ W.		36	18º 16′ 43″ N.	64º 39′ 41″ W.
10	18º 24′ 30″ N.	64º 52′ 19″ W.		37	18º 11′ 33″ N.	64º 38′ 58″ W.
11	18º 23′ 51″ N.	64º 51′ 50″ W.		38	18º 3′ 2″ N.	64º 38′ 3″ W.
12	18º 23′ 42″ N.	64º 51′ 23″ W.		39	18º 2′ 56″ N.	64º 29′ 35″ W.
13	18º 23′ 36″ N.	64º 50′ 17″ W.		40	18º 2′ 51″ N.	64º 27′ 2″ W.
14	18º 23′ 48″ N.	64º 49′ 41″ W.		41	18º 2′ 30″ N.	64º 21′ 8″ W.
15	18º 24′ 11″ N.	64º 49′ 0″ W.		42	18º 2′ 31″ N.	64º 20′ 8″ W.
16	18º 24′ 28″ N.	64º 47′ 57″ W.		43	18º 2′ 3″ N.	64º 15′ 57″ W.
17	18º 24′ 18″ N.	64º 47′ 1″ W.		44	18º 0′ 12″ N.	64º 2′ 29″ W.
18	18º 23′ 13″ N.	64º 46′ 37″ W.		45	17º 59′ 58″ N.	64º 1′ 4″ W.
19	18º 22′ 37″ N.	64º 45′ 20″ W.		46	17º 58′ 47″ N.	63º 57′ 1″ W.
20	18º 22′ 39″ N.	64º 44′ 42″ W.		47	17º 57′ 51″ N.	63º 53′ 54″ W.
21	18º 22′ 42″ N.	64º 44′ 36″ W. .		48	17º 56′ 38″ N.	63º 53′ 21″ W.
22	18º 22′ 37″ N.	64º 44′ 24″ W.		49	17º 39′ 40″ N.	63º 54′ 53″ W.
23	18º 22′ 39″ N.	64º 43′ 42″ W.		50	17º 37′ 8″ N.	63º 55′ 10″ W.
24	18º 22′ 30″ N.	64º 43′ 36″ W.		51	17º 30′ 21″ N.	63º 55′ 56″ W.
25	18º 22′ 25″ N.	64º 42′ 58″ W.		52	17º 11′ 36″ N.	63º 57′ 57″ W.
26	18º 22′ 26″ N.	64º 42′ 28″ W.		53	17º 4′ 60″ N.	63º 58′ 41″ W.
27	18º 22′ 15″ N	64º 42′ 3″ W		54	16º 59′ 49″ N.	63º 59′ 18″ W.
				55	17º 18′ 37″ N.	67º 32′ 14″ W.

TYPE APPROVAL AND OPERATING LIMITS FOR SHIPBOARD INCINERATORS

1. Ships' incinerators described in Regulation 16(5) on board shall possess an IMO Type Approval Certificate for each incinerator. In order to obtain such certificate, the incinerator shall be designed and built to an approved standard as described in Regulation 16(5). Each model shall be subject to a specified type approval test operation at the factory or an approved test facility, and under the responsibility of the Administration, using the following standard fuel/waste specification for the type approval test for determining whether the incinerator operates within the limits specified in paragraph 2 of this appendix:

Sludge Oil Consisting of:	75% sludge oil from heavy fuel oil (HFO); 5% waste lubricating oil; and 20% emulsified water.
Solid waste consisting of:	50% food waste; 50% rubbish containing; approx. 30% paper, approx. 40% cardboard, approx. 10% rags, approx. 20% plastic The mixture will have up to 50% moisture and 7% incombustible solids.

2. Incinerators described in Regulation 16(5) shall operate within the following limits:

O_2 in combustion chamber:	6 – 12%
CO in flue gas maximum average:	200 mg/MJ
Soot number maximum average:	Bacharach 3 or Ringelman 1 (20% opacity) (A higher soot number is acceptable only during very short periods such as starting up)
Unburned components in ash residues:	Maximum 10% by weight
Combustion chamber flue gas outlet temperature range:	850 – 1200^{o}C

BUNKER DELIVERY NOTE

Name and IMO Number of receiving ship:

Port:

Date of commencement of delivery:

Name, address, and telephone number of marine fuel oil supplier:

Product name(s):	Quantity in metric tons:	Density at 15°C, kg/m^3:	Sulphur content (%m/m):

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 this Annex and that the sulphur content of the fuel oil supplied does not exceed:

□ the limit value given by regulation 14.1 of this Annex;
□ the limit value given by regulation 14.4 of this Annex; or
□ 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:

.1 in combination with an equivalent means of compliance in accordance with regulation 4 of this Annex; or

.2 is subject to a relevant exemption for a ship to conduct trials for sulphur oxides emission reduction and control technology research in accordance with regulation 3.2 of this Annex.

The declaration shall be completed by the fuel oil supplier's representative by marking the applicable box(es) with a cross (x).

<signature & name>
(Ship Representative)

<signature & name>
(Bunker Supplier Representative)

Date:

TABLE 1
Reduction factors (in percentage) for the EEDI relative to the EEDI Reference line

Ship Type	Size	Phase 0 1 Jan 2013 – 31 Dec 2014	Phase 1 1 Jan 2015 – 31 Dec 2019	Phase 2 1 Jan 2020 – 31 Dec 2024	Phase 3 1 Jan 2025 and onwards
Bulk carrier	20,000 DWT and above	0	10	20	30
	10,000 – 20,000 DWT	n/a	0-10*	0-20*	0-30*
Gas carrier	10,000 DWT and above	0	10	20	30
	2,000 – 10,000 DWT	n/a	0-10*	0-20*	0-30*
Tanker	20,000 DWT and above	0	10	20	30
	4,000 – 20,000 DWT	n/a	0-10*	0-20*	0-30*
Container ship	15,000 DWT and above	0	10	20	30
	10,000 – 15,000 DWT	n/a	0-10*	0-20*	0-30*
General Cargo ships	15,000 DWT and above	0	10	15	30
	3,000 – 15,000 DWT	n/a	0-10*	0-15*	0-30*
Refrigerated cargo carrier	5,000 DWT and above	0	10	15	30
	3,000 – 5,000 DWT	n/a	0-10*	0-15*	0-30*
Combination carrier	20,000 DWT and above	0	10	20	30
	4,000 – 20,000 DWT	n/a	0-10*	0-20*	0-30*
LNG carrier***	10,000 DWT and above	n/a	10**	20	30
Ro-ro cargo ship (vehicle carrier)***	10,000 DWT and above	n/a	5**	15	30
Ro-ro cargo ship***	2,000 DWT and above	n/a	5**	20	30
	1,000 – 2,000 DWT	n/a	0-5*,**	0-20*	0-30*
Ro-ro passenger ship***	1000 DWT and above	n/a	5**	20	30
	250 – 1,000 DWT	n/a	0-5*,**	0-20*	0-30*

Cruise passenger ship*** having non-conventional propulsion	85,000 GT and above	n/a	5**	20	30
	25,000 – 85,000 GT	n/a	0-5*,**	0-20*	0-30*

* Reduction factor to be linearly interpolated between the two values dependent upon vessel size. The lower value of the reduction factor is to be applied to the smaller ship size.

** Phase 1 commences for those ships on 1 September 2015.

*** Reduction factor applies to those ships delivered on or after 1 September 2019, as defined in paragraph 43 of regulation 2.

Note: n/a means that no required EEDI applies.

TABLE 2
Parameters for determination of reference values for the different ship types

Ship type defined in regulation 2 of Convention		**a**	**b**	**c**
2.25	Bulk carrier	961.79	DWT of the ship	0.477
2.26	Gas carrier	1120.00	DWT of the ship	0.456
2.27	Tanker	1218.80	DWT of the ship	0.488
2.28	Container ship	174.22	DWT of the ship	0.201
2.29	General cargo ship	107.48	DWT of the ship	0.216
2.30	Refrigerated cargo carrier	227.01	DWT of the ship	0.244
2.31	Combination carrier	1219.00	DWT of the ship	0.488
2.33	Ro-ro cargo ship (vehicle carrier)	$(DWT/GT)^{-0.7}$ · 780.36 where DWT/GT<0.3 1812.63 where DWT/GT≥0.3	DWT of the ship	0.471
2.34	Ro-ro cargo ship	1405.15	DWT of the ship	0.498
		1686.17* *DWT of the ship where DWT ≤ 17,000** *17,000 where DWT > 17,000**		
2.35	Ro-ro passenger ship	752.16	DWT of the ship	0.381
		902.59* *DWT of the ship where DWT ≤ 10,000** *10,000 where DWT > 10,000**		
2.38	LNG carrier	2253.7	DWT of the ship	0.474
2.39	Cruise passenger ship having non-conventional propulsion	170.84	GT of the ship	0.214

**to be used from phase 2 thereafter.*

INFORMATION ON SHIP FUEL OIL CONSUMPTION DATA COLLECTION

Identity of the ship

- IMO number

Period of calendar year for which the data is submitted

- Start date (dd/mm/yyyy)
- End date (dd/mm/yyyy)

Technical characteristics of the ship

- Ship type, as defined in regulation 2 of this Annex or other (to be stated)
- Gross tonnage (GT)
- Net tonnage (NT)
- Deadweight tonnage (DWT)
- Power output (rated power) of main and auxiliary reciprocating internal combustion engines over 130 kW (to be stated in kW)
- EEDI (if applicable)
- Ice class

Fuel oil consumption, by fuel oil type in metric tonnes and methods used for collecting fuel oil consumption data

Distance travelled

Hours underway