Australian Government
Australian Maritime Safety Authority

MARINE NOTICE

Marine Notice 14/2010
Supersedes 18/2007

Revised Regulations for Air Emissions from Vessels

The purpose of this Marine Notice is to advise of changes to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL) that will enter into force internationally on 1 July 2010. Annex VI of MARPOL contains regulations for the prevention of air pollution from ships and is focussed on the properties of fuel and marine engines. The changes include significant and progressive limits for sulphur oxides (SOx) and nitrogen oxides (NOx) and will also address emissions of particulate matter. The concept of emission control areas (ECAs) for stringent NOx reductions, similar to those for SOx emission control areas, has also been introduced. The revised Annex VI will allow for ECAs to be designated for SOx and particulate matter emissions, nitrogen oxide emissions, or all three types of emissions from ships.

SOx and Particulate Matter Emissions

It is generally recognised that SOx emissions are a function of the sulphur content of fuel. Reducing sulphur content will result in lower particulate matter emissions. The current global cap of 4.5 percent sulphur content will be reduced to 3.5 percent from 1 January 2012, and further reduced to 0.5 percent from 1 January 2020 (subject to an IMO feasibility review to be completed no later than 2018).

With regard to SOx emission control areas, the current cap of 1.5 percent sulphur content will be reduced to 1.0 percent from 1 July 2010, and 0.10 percent from 1 January 2015.

The Baltic Sea is currently a SOx ECA, and from 1 August 2011 North American waters (both east and west coasts of the United States and Canada) will be a SOx and NOx emission control area. The area of the North American ECA includes waters adjacent to the Pacific coast, the Atlantic/Gulf coast and the eight main Hawaiian Islands. It extends up to 200 nautical miles from coasts of the United States, Canada and the French territories of Saint-Pierre and Miquelon, which form an archipelago off the coast of Newfoundland. A fact sheet and map of the new North American Emission Control Area can be located at www.epa.gov/oms/regs/nonroad/marine/ci/420f10015.htm.

Further emission control areas are expected to be identified over the next few years. Note that there are currently no proposals to introduce any emission control areas in Australian waters, although this cannot be ruled out in the longer term.

A new fuel availability provision has also been included in the revised Annex VI that sets out what actions apply should a ship be unable to obtain the fuel necessary to comply with a given requirement. Owners and operators of Australian ships should notify AMSA and the competent authority of the relevant port of destination when a ship cannot purchase compliant fuel oil. This should be done prior to arrival in the port.

In Australia, all local suppliers of fuel oil are required to be registered with AMSA, and are listed on the AMSA web site at www.amsa.gov.au, follow the link to “registered Fuel Oil Suppliers”.

Another option for marine engines to meet the lower sulphur levels is by using an exhaust gas cleaning system. The revised MARPOL Annex VI allows (with the approval of AMSA for Australian registered ships) the use of an alternate compliance method at least as effective in terms of emission reductions as the fuel oil requirements outlined above. Australian shipowner/operators considering this option should obtain a copy of the IMO Guidelines for Exhaust Gas Cleaning Systems (Resolution MEPC.184(59) from AMSA (email: eps@amsa.gov.au).

NOx regulations for new engines

As indicated above, the revised Annex VI provides for progressive reductions in NOx emissions from marine engines. The new limits represent a reduction of approximately 20 percent over the current 17g/kW standard stipulated in the existing Annex VI (Tier I) levels and will apply to ships constructed on or after 1 January 2011 (to be known as Tier II limits). For engines installed on ships constructed on or after 1 January 2016 operating in a NOx ECA, a further reduction of around 80 percent will apply (Tier III limits). Outside a designated ECA, the Tier II limits will apply. These requirements are summarised in the following table.

Tiers for NOx limits (new engines)	Effective date
Tier I – 17g/kW	January 1, 2000
Tier II – 14.4 g/kW	January 1, 2011
Tier III – 3.4 g/KW	January 1, 2016 (ECAs)

The NOx regulations for new engines is a requirement that will be met by engine manufacturers, and many products are already compliant. When purchasing a new engine, shipowners and operators must ensure that the engine has been issued with an Engine International Air Pollution Prevention Certificate (EIAPP).

The more stringent Tier III standards are expected to be met through technologies such as water induction into the combustion process, exhaust gas recirculation, and selective catalytic reduction.

NOx standards for existing engines

Under the revised Annex VI a NOx emission limit of 17g/kW is applied to a diesel engine with a power output of more than 5,000 kW and a displacement per cylinder at, or above, 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000. However, this retrospective requirement is applicable only where an Approved Method (for example, an engine upgrade kit) for that engine has been certified by an administration of a party to MARPOL and notification of such certification has been submitted to IMO by the certifying administration. Certification of an approved method is to be in accordance with the NOx Technical Code. Further, certification is to include verification:

- 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%, increase fuel consumption by more that 2%, or adversely affect engine durability or reliability; and
- that the cost of the Approved Method is not excessive, as determined by a comparison of the amount of NOx reduced by the Approved Method and the cost of purchasing and installing such approved method.

It should also be noted that, where an approved method has been submitted to IMO for a particular engine, as outlined above, the Approved Method is to be applied no later that the first renewal survey that occurs 12 months or more after the documents are deposited with IMO. Where the owner of an Australian ship is able to demonstrate to AMSA that the Approved Method was not commercially available, then this may be extended to the next annual survey which falls after the Approved Method is commercially available.

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30 June 2010

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File No: 1309/08