

RESOLUTION MEPC.82(43)  
adopted on 1 July 1999  
GUIDELINES FOR MONITORING THE WORLD-WIDE AVERAGE  
SULPHUR CONTENT OF RESIDUAL FUEL OILS  
SUPPLIED FOR USE ON BOARD SHIPS

**ANNEX 15**

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THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the function of the Committee conferred upon it by international conventions for the prevention and control of marine pollution,

BEING AWARE that the Conference of Parties to MARPOL 73/78 was held in September 1997 and that the Conference adopted 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, which sets out in its annex the new Annex VI, Regulations for the Prevention of Air Pollution from Ships, and eight conference resolutions including resolution 4, which provides for the development of guidelines for monitoring the world-wide average sulphur content of residual fuels oil supplied for use on board ships,

RECOGNIZING regulation 14 of Annex VI to MARPOL 73/78 which requires Parties to Annex VI of MARPOL 73/78 to monitor world-wide average sulphur content of residual fuel oil supplied for use on board ships taking into account guidelines to be developed by the Organization,

1. ADOPTS the Guidelines for Monitoring the World-wide Average Sulphur Content of Residual Fuel Oils Supplied for Use on Board Ships as set out in the Annex to the present resolution;
2. URGES Member Governments and interested organizations to make available the resources and expertise necessary for the implementation of these guidelines.

## ANNEX

### **GUIDELINES FOR MONITORING THE WORLD-WIDE AVERAGE SULPHUR CONTENT OF RESIDUAL FUEL OILS SUPPLIED FOR USE ON BOARD SHIPS**

#### **Preface**

1 The primary objective of the guidelines is to establish an agreed method to monitor the average sulphur content of residual fuel oils supplied for use on board ships. A further objective of the guidelines is to re-open the discussion in MEPC on measures to reduce SO<sub>x</sub> emissions from ships, should the average sulphur level in fuels, calculated on the basis of these guidelines, show a sustained increase.

#### **Introduction**

2 The basis for these guidelines is provided in regulation 14 (2) of Annex VI of MARPOL 73/78 and in Conference Resolution 4 (in MP/CONF.3/35), on monitoring the world wide average sulphur content of residual fuel oil supplied for use on board ships. Among the emissions addressed by Annex VI are emissions resulting from the combustion of fuels containing sulphur. An upper limit for the sulphur content of fuels was set and it was further decided to monitor the average sulphur content of fuel.

It is estimated that independent testing companies undertake up to 50,000 tests annually, which cover between 25 and 35% of all deliveries. From the data gathered by these testing services the current average figures for the sulphur content of residual fuels can be derived. These figures are publicised regularly and are currently in the order of 3% by mass.

#### **Definitions**

3 For the purpose of these guidelines the following definitions shall apply:

(1) *Residual fuel:*

Fuel oil for combustion purposes delivered to and used on board ships with a kinematic viscosity at 100°C greater than or equal to 10.0 centistoke.<sup>1</sup>

(2) *Provider of sampling and testing services:*

A company that, on a commercial basis, provides testing and sampling services of bunker fuels delivered to ships for the purpose of assessing quality parameters of these fuels, including the sulphur content.

(3) *Reference value A<sub>w</sub>:*

The value of the world-wide average sulphur content in residual fuel oils supplied for use on board ships, based on the first three years of data collected and as determined on the basis of paragraph 4 and 5 of these guidelines.

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<sup>1</sup> Reference is made to ISO Standard 8217, 1996

## 4 Monitoring and calculation of yearly and three-year rolling average

### 4.1 Monitoring

Monitoring shall be based on calculation of average sulphur content of residual fuels on the basis of sampling and testing by independent testing services. Every year the average sulphur content of residual fuels shall be calculated. After three years the reference value for monitoring will be set as described in paragraph 5.

### 4.2 Calculation of yearly average

At the basis of monitoring is the calculation, on an annual basis, of the average sulphur content of residual fuel.

The calculation of the average sulphur content is executed as follows:

For a certain calendar year, the sulphur contents of the samples analysed (one sample for each delivery of which the sulphur content is determined by fuel oil analysis) are recorded. The sulphur contents of the samples analysed are added up and divided by the number of samples. The outcome of that division is the average sulphur content of residual fuel for that year.

As a basis for well informed decisions a graphical representation of the distribution of the global sulphur content in residual fuels in terms of the % sulphur in increments of 0.5% sulphur plotted against the quantity of fuel associated with each incremental sulphur content range shall be made available by 31 January of each year.

The mathematical formula for the method of calculation described, is given in appendix 1 to this guideline.

### 4.3 Three year rolling average

A three year rolling average shall be calculated as follows:

$$A_{cr} = (A_{c1} + A_{c2} + A_{c3})/3$$

in which:

$A_{cr}$  = rolling average S-content of all deliveries tested over a 3 year period

$A_{c1}, A_{c2}, A_{c3}$  = individual average S-contents of all deliveries tested for each year under consideration

$A_{cr}$  is to be recalculated each year by adding the latest figure for  $A_c$  and deleting the oldest.

Setting of the reference value

5 The reference value of the world wide average sulphur content of residual fuel oils supplied for use on board ships shall be  $A_w$ , where  $A_w = A_{cr}$  as calculated in January of the year following the first three years in which data were collected on the basis of these guidelines.  $A_w$  shall be expressed as a percentage.

Agenda setting of consideration of measures to reduce SO<sub>x</sub> emissions

6 If in any given year following the setting of the reference value, A<sub>cr</sub> exceeds A<sub>w</sub> by a number equal to or greater than 0.2 %, the Marine Environment Protection Committee shall consider the need for further measures to reduce SO<sub>x</sub> emissions from ships, so as to decide whether it should be considered a high priority item for the Committee. MEPC shall continually review this excess value, (now 0.2%) once the reference value has been set.

### **Providers of sampling and testing services**

7 For the purpose of the initial five years operational period, there are presently 3 providers of sampling and testing services under these guidelines

Any additional providers of sampling and testing services shall be subject to the following criteria:

- .1 They shall preferably be IACS members, but shall in any way be subject to the approval of the Marine Environment Protection Committee, which shall apply these criteria.
- .2 They shall be provided with a technical and managerial staff of qualified professionals providing adequate geographical coverage and local representation to ensure quality services in a timely manner;
- .3 They shall provide services governed by a documented Code of Ethics;
- .4 They shall be independent as regards to commercial interest in the outcome of monitoring;
- .5 They shall implement and maintain an internationally recognized quality system, certified by an independent auditing body, which ensures reproducibility and repeatability of services which are internally audited, monitored and carried out under controlled conditions.
- .6 They shall take a significant number of samples on an annual basis for the purpose of globally monitoring average sulphur content of residual fuels.

### **Standardized method of calculation**

8 Each of the providers of sampling and testing services shall provide the necessary information for the calculation of the average sulphur content of the residual fuels to the Secretariat of IMO or another agreed third party on the basis of a mutually agreed format, approved by MEPC. This party will process the information and will provide the outcome in the agreed format to MEPC. From the viewpoint of competitive positions the information involved shall be considered sensitive. Therefore the third party involved shall treat such information as indicated by any party involved as confidential, without prejudice to the information required by the Committee for the purposes of monitoring and related decision making.

## **Financial arrangements**

9 The costs of monitoring consist of an initial amount for setting up monitoring by the providers listed in paragraph 7 and an annual fee to these providers for the provision of the update.

The costs of monitoring shall, for a 5-year operational period, be borne on a voluntary basis by the member States listed in appendix 2 of this guideline. The experience gained shall be evaluated by the end of the fourth year of operation. On that basis, the Marine Environment Protection Committee, in consultation with the Secretary-General of IMO, is invited to consider more permanent financial arrangements to cover the costs of the agreed monitoring system.

## Appendix 1

### Calculation of average sulphur content

Note: wherever “all deliveries“ are mentioned, this is meant to refer to all deliveries sampled and tested for sulphur and being taken into account for the purpose of monitoring.

#### Calculation not weighted for quantity

$$A_{cj} = \frac{\sum_{i=1,2,3,...N} a_i}{N_j}$$

in which:

$A_{cj}$  = the average sulphur content of all deliveries sampled world wide in year j

$a_i$  = the sulphur content of individual sample for delivery i

$N_j$  = total number of samples taken in year j

## Appendix 2

### **List of countries bearing the costs of monitoring for a five-year period**

Denmark  
Finland  
Netherlands  
Norway  
Sweden  
United Kingdom

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