ANNEX III

TECHNICAL DETAILS OF SOUND SIGNAL APPLIANCES

1. Whistles

(The subparagraphs (a) and (c) shall enter into force on 29 November 2003, as amended by Resolution A.910(22))

(a) Frequencies and range of audibility.

The fundamental frequency of the signal shall lie within the range 70-700Hz. The range of audibility of the signal from a whistle shall be determined by those frequencies, which may include the fundamental and/or one or more higher frequencies, which lie within the range 180-700Hz (+/-1%) for a vessel of 20 metres or more in length, or 180-2100Hz (+/-1%) for a vessel of less than 20 metres in length and which provide the sound pressure levels specified in paragraph 1(c) below.

(b) Limits of fundamental frequencies.

To ensure a wide variety of whistle characteristics, the fundamental frequency of a whistle shall be between the following limits :

(i) 70 - 200 Hz, for a vessel 200 metres or more in length;

(ii) 130 - 350 Hz, for a vessel 75 metres but less than 200 metres in length;

(iii) 250 - 700 Hz, for a vessel less than 75 metres in length.

(c) Sound signal intensity and range of audibility.

A whistle fitted in a vessel shall provide, in the direction of maximum. intensity of the whistle and at a distance of 1 metre from it, a sound pressure level in at least one 1/3rd-octave band within the range of frequencies 180-700Hz (+/-1%) for a vessel of 20 metres or more in length, or 180-2100Hz (+/-1%) for a vessel of less than 20 metres in length, of not less than the appropriate figure given in the table below.

Length of vessel in metres	1/3rd-octave band level at 1 metre in dB referred to 2 x 10^{-5} N/m^2	Audibility range in nautical miles
200 or more	143	2
75 but less than 200	138	1.5
20 but less than	130	1

75		
Less than 20	120*	0.5
	115**	
	111***	

* When the measured frequencies lie within the range 180-450Hz

** When the measured frequencies lie within the range 450-800Hz

*** When the measure frequencies lie within the range 800-2100Hz

(d) Directional properties.

The sound pressure level of a directional whistle shall be not more than 4 dB below the prescribed sound pressure level on the axis at any direction in the horizontal plane within ±45 degrees of the axis. The sound pressure level at any other direction in the horizontal plane shall be not more than 10 dB below the prescribed sound pressure level on the axis, so that the range in any direction will be at least half the range on the forward axis. The sound pressure level shall be measured in that 1/3rd-octave band which determines the audibility range.

(e) Positioning of whistles.

When a directional whistle is to be used as the only whistle on a vessel, it shall be installed with its maximum intensity directed straight ahead.

A whistle shall be placed as high as practicable on a vessel, in order to reduce interception of the emitted sound by obstructions and also to minimize hearing damage risk to personnel. The sound pressure level of the vessel's own signal at listening posts shall not exceed 110 dB (A) and so far as practicable should not exceed 100 dB (A).

(f) Fitting of more than one whistle.

If whistles are fitted at a distance apart of more than 100 m, it shall be so arranged that they are not sounded simultaneously.

(g) Combined whistle systems.

If due to the presence of obstructions the sound field of a single whistle or of one of the whistles referred to in paragraph 1(f) above is likely to have a zone of greatly reduced signal level, it is recommended that a combined whistle system be fitted so as to overcome this reduction. For the purposes of the Rules a combined whistle