(e) the International Telecommunication Union World Administrative Radio Conference for Space Telecommunications (1971) has allocated the frequency band 406 – 406.1 MHz to the mobile-satellite service (earth-to-space) solely for the use and development of low-power (not to exceed 5 watts) emergency position-indicating radio beacon systems using space techniques,

STRESSING AGAIN the urgent need for unification of the characteristics of radio beacon signals, as expressed in Resolution A.127(V),

RESOLVES to recommend that Contracting Governments take into account the provisions and Recommendations referred to above when preparing national regulations for the carriage and use of emergency position-indicating radio beacons.

RESOLUTION A.280(VIII)

Adopted on 20 November 1973
Agenda item 10

RECOMMENDATION ON PERFORMANCE STANDARDS FOR GYRO COMPASSES

THE ASSEMBLY,

NOTING Article 16(i) of the Convention on the Inter-Governmental Maritime Consultative Organization concerning the functions of the Assembly,

BEARING IN MIND the provisions of Regulation 12 of Chapter V of the International Convention for the Safety of Life at Sea, 1960, as amended,

HAVING CONSIDERED the Report of the Maritime Safety Committee on its twenty-seventh session,

RESOLVES:

(a) to adopt the Recommendation on Performance Standards for Gyro Compasses; and

(b) to recommend Member Governments to ensure that gyro compasses conform to performance standards not inferior to those shown in the Annex to this Resolution.

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR GYRO COMPASSES

1. INTRODUCTION

1.1 The gyro compass required by Regulation 12 of Chapter V, as amended, should determine the direction of the ship's head in relation to geographic (true) north.

1.2 The equipment should comply with the following minimum performance requirements.

2. DEFINITIONS

For the purpose of this Recommendation, the following definitions apply:

(a) The term "gyro compass" comprises the complete equipment and includes all essential elements of the complete design.

(b) The "true heading" is the horizontal angle between the vertical plane passing through the true meridian and the vertical plane passing through the ship's fore and aft datum line. It is measured from True North (000°) clockwise through 360°.

(c) The compass is said to be "settled" if any three readings taken at intervals of 30 minutes (when the compass is on a stationary base) are within a band of 0.7 degrees.

(d) The "settle point heading" is the average value of three readings taken at 30 minute intervals after the compass has settled.

(e) The "settle point error" is the difference between settle point heading and true heading.

(f) The errors to which the gyro compass is subject are considered to have a probability of 68.3 per cent, where the errors are taken as differences between the observed values and their mean value.

The "maximum error" is understood as triple the above error and has a probability of 99.7 per cent.

3. METHOD OF PRESENTATION

The compass card should be graduated in equal intervals of one degree or a fraction thereof. A numerical indication should be provided at least at every ten degrees, starting from 000° clockwise through 360°.

4. ILLUMINATION

Fully adequate illumination should be provided to enable reading of scales at all times. Facilities for dimming should be provided.

5. ACCURACY

5.1 **Settling time of equipment**

The compass should settle within six hours of switching on in latitudes of up to 70°.

5.2 **Performance under operational conditions**

(a) The maximum value of the settle point error of the master compass should not exceed ±2° in the general conditions mentioned in paragraphs 6.1 and 8 and including variations in magnetic field likely to be experienced in the vessel in which it is installed.

(b) The maximum error of the master compass in latitudes up to 70° should not exceed:

(i) ±1° when the ship is travelling on a straight course at a constant speed in conditions of calm sea;

(ii) ±2.5° due to a rapid alteration of course of 180° at speeds up to 20 knots;

(iii) ±2° due to a fast alteration of speed of 20 knots;

(iv) ±3° when rolling and pitching with any period between 3 and 15 seconds, a maximum angle of 22.5° and a maximum horizontal acceleration of 3 m/s^2.

(c) The maximum divergence in reading between the master compass and repeaters should not exceed ±0.3° under the conditions mentioned in paragraph 5.2(a).

Note: When the compass is used for purposes other than steering and bearing, a higher accuracy might be necessary.

To ensure that the maximum error referred to in sub-paragraph (b)(iv) is not exceeded in practice, it will be necessary to pay particular attention to the siting of the master compass.

6. POWER SUPPLY

6.1 The equipment should be capable of operating continuously in accordance with the requirements of this Recommendation in the presence of such variations of the power supply as are normally expected in a vessel.

6.2 Means should be incorporated for the protection of the equipment from excessive currents and voltages, transients and accidental reversal of power supply polarity.

6.3 If provision is made for operating the equipment from more than one source of electrical energy, arrangements for rapidly changing from one source of supply to the other should be incorporated.

7. INTERFERENCE

7.1 All steps should be taken to eliminate as far as practicable the causes of, and to suppress, electromagnetic interference between the gyro compass and other equipment on board.

7.2 Mechanical noise from all units should be so limited as not to prejudice the hearing of sounds on which the safety of the ship might depend.

7.3 Each unit of the equipment should be marked with the minimum safe distances at which it may be mounted from a standard or a steering magnetic compass.

8. DURABILITY AND RESISTANCE TO EFFECTS OF CLIMATE

The equipment should be capable of continuous operation under the conditions of vibration, humidity and change of temperature likely to be experienced in the vessel in which it is installed.

9. CONSTRUCTION AND INSTALLATION

9.1 The master compass and any repeaters used for taking visual bearings should be installed in a ship with their fore and aft datum lines parallel to the ship's fore and aft datum line to within $\pm 0.5^{\circ}$. The lubber line should be in the same vertical plane as the centre of the card of the compass and should be aligned accurately in the fore and aft direction.

9.2 Means should be provided for correcting the errors induced by speed and latitude.

9.3 An automatic alarm should be provided to indicate a major fault in the compass system.

9.4 The system should be designed to enable heading information to be provided to other navigational aids such as radar, radio direction-finder and automatic pilot.

9.5 Information should be provided to enable competent members of a ship's staff to operate and maintain the equipment efficiently.

9.6 The equipment should be provided with an indication of manufacture, type and/or number.

9.7 The equipment should be so constructed and installed that it is readily accessible for maintenance purposes.

RESOLUTION A.281(VIII)

Adopted on 20 November 1973
Agenda item 10

RECOMMENDATION ON GENERAL REQUIREMENTS FOR ELECTRONIC NAVIGATIONAL AIDS

THE ASSEMBLY,

NOTING Article 16(i) of the Convention on the Inter-Governmental Maritime Consultative Organization concerning the functions of the Assembly,