

CHAPTER 24 - PROFICIENCY IN COMPASS DEVIATION

PART I - GENERAL REQUIREMENTS OF APPLICANTS

- 24.1 (1) Every applicant for a certificate of proficiency in compass deviation shall
- (a) complete compensations or adjustments of a ship's magnetic compasses on at least 12 different ships;
 - (i) of which not less than four must have been on steel ships; and
 - (ii) all of which must have been completed within three years immediately preceding the application;
 - (b) obtain a medical certificate prescribed by the Crewing Regulations;
 - (c) obtain a Marine First Aid Basic Certificate on completion of a course set out in TP 13008; and
 - (d) pass a written, oral and practical examination.


PART II - VALIDITY OF CERTIFICATE

- 24.2 The certificate allows the holder to adjust ships' magnetic compasses and provide compass deviation certificates.

PART III - SYLLABUS OF EXAMINATION

24.3 Examination Syllabus

ITEM	COLUMN
1.	<p>Magnetism</p> <p>Knowledge of magnetic properties of materials, including induction, susceptibility and permeability; terrestrial magnetism, dip, total force, horizontal force, vertical force, and the effect on the deviation of the compass accompanying any change in the values of these elements; causes and effects of variation; ship's magnetism, including the characteristics of hard and soft iron and permanent, sub-permanent and induced magnetism; components P, Q and R, and the rods a, b, c, d, e, f, g, h and k; approximate coefficients A, B, C, D, E and J, and the causes of sextantal, octonal, decantal and dodecantal deviations; constants lambda and mu and the relationship between them; general principles of compass correction and methods of finding, compensating a compass for the various components that might cause deviation, including the effects of heel and trim; compensation by use of the kelvin deflector, the principle of the deflector method and the information that can be deduced from the deflector readings; setting and lining up of compasses with due regard for the proximity of magnetic material, electrical devices and other disturbing influences; theory of degaussing in ships fitted with M coils and compass compensation by means of B and heeling error coils; procedure when swinging ship and construction of deviation tables from bearings of a distant object, reciprocal bearings or azimuths of a heavenly body; practical analysis of a deviation table and practical compass correction.</p>

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2.	<p>Electricity</p> <p>Knowledge of: electrical currents and their production; simple cells of primary and secondary types, including the effects of polarization; electromotive force, resistance and current; Ohm's law and Kirchoff's laws; magnetic fields and lines of force, induced magnetism, fields of conductors carrying currents; solenoids and electromagnets; effect of magnetic fields of all types on the compass needle; elementary principles of dynamos and motors; electrical lighting.</p>
3.	<p>Oral Examination</p> <p>The oral examination is based on practical compass adjustment using Beall's compass deviascope or instructional binnacle; practical aspects of the syllabus in the written examination.</p>