Australian Government

Assessment Requirements for MARB051 Apply elements of magnetic compass adjusting

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the MAR Maritime Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one of occasion and include:

- adjusting a magnetic compass onboard a variety of commercial vessels less than or equal to 45 metres on at least eight (8) separate occasions and must include:
    - two (2) swings in a simulated environment, and
    - six (6) swings onboard commercial vessels and must include:
        - two (2) swings on a compass card of a diameter 75 millimetres
        - two (2) swings on a compass card of a diameter 100 millimetres
        - two (2) swings on a compass card of a diameter 125 millimetres or over

      Or:
    - eight (8) swings onboard a variety of commercial vessels:
        - two (2) swings on a compass card of a diameter 75 millimetres
        - two (2) swings on a compass card of a diameter 100 millimetres
        - two (2) swings on a compass card of a diameter 125 millimetres or over
- adjusting deviations from coefficients
- analysing the ship's compass deviation book and records to determine causes of irregular deviations and determining measures for their removal
- ascertaining the magnetic bearing of a distant object and/or magnetic heading to determine compass deviation
- assessing the safe distances of electronic equipment in the vicinity of the compass
- checking accuracy of instruments used in connection with compasses
- communicating with the Master to ensure ship is swung appropriately and when required in accordance with compass adjustment requirements
- determining deviations due to coefficients A, B, C D and E as appropriate
- taking a bearing, using and testing a pelorus and an azimuth mirror
- using methods of swinging a ship to obtain a table of deviations
- using the analysis method of adjustment and the tentative method of adjustment to adjust a magnetic compass
- using the appropriate equipment, methods and basic calculations for finding and

compensating compass deviations
- using vertical force instrument (VFI) correctly and accurately.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- analysis method of adjustment and the tentative method of adjustment, including:
  - process to be followed when adjusting a compass using the analysis method of adjustment and the tentative method of adjustment
  - rationale for using the analysis method of adjustment, including:
    - following collision, grounding, stranding, fire of appreciable size, or struck by lightening
    - following large structural changes to the hull or the superstructure
    - when a ship is new
    - when the ship resumes service after having been laid up for a considerable time
  - rationale for using the tentative method of adjustment, including:
    - after changing any correctors during the voyage
    - after the carriage of cargoes of a magnetic nature and/or loaded/unloaded by electro-magnetic cranes
    - when a ship is at the magnetic equator, to observe deviations and correct permanent coefficient B
    - when a ship is operating in an area remote from the last place of swinging
    - when readjustment to the full compensation is done
- basic calculations which can be used when adjusting a compass
- basic method of detecting mechanical errors in a liquid magnetic compass
- basic methods for finding and compensating for deviations due to coefficients A, B, C, D and E
- basic methods used for taking a bearing, using and testing a pelorus and azimuth mirror for any error
- bearings and headings, including:
  - compass heading
  - magnetic bearing of a distant object
  - magnetic heading
  - principle headings (cardinal and intercardinal)
  - true bearings
- how to produce a curve or table of deviation from observations on the principle headings
- movable magnetic materials, including process for securing or removing materials
- planning for a compass adjustment, including:
  - job requirements and specifications
  - personal protective equipment (PPE)

    - time allowed to complete compass adjustment
- process for:
    - determining that a ship is in its 'normal seagoing' condition
    - physically inspecting a compass and binnacle
    - securing magnetic equipment in 'normal seagoing' conditions
    - swinging a ship
- rules to be followed when placing correctors
- safe distances of electronic equipment to the compass
- ship's compass deviation book and records, including:
    - how a compass deviation book can be used to identify causes of irregular magnetic compass deviation
    - how compass deviation book is used to record outcome of the magnetic compass adjustment
- tools and equipment used to inspect and adjust a compass, including:
    - permanent and soft iron correctors
    - VFI
- transmitting magnetic compass bowls and repeaters
- various coefficients resulting from vessel magnetism, including:
    - A, B, C, D, E, F, G, H K and J
    - basic calculations for coefficient A, B, C, D and E to determine deviation on any particular heading
    - limitations and practicalities of adjusting a compass using A, B, C, D and E coefficients
- work health and safety (WHS)/occupational health and safety (OHS) workplace procedures, including:
    - embarking and disembarking from a ship safely
    - manufacturer's specifications
    - Marine Order and International Convention for the Safety of Life as Sea (SOLAS), including requirements of a safely rigged pilot ladder
    - PPE requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Practical assessment must include at least eight (8) practical swings onboard a variety of commercial vessels less than or equal to 45 metres in length.

A qualified Compass Adjuster as defined in Marine Orders and/or qualified assessor must accompany and supervise a person undertaking practical assessments onboard a vessel.

All swings must be recorded in a training log, signed by a qualified Compass Adjuster and verified by a qualified assessor.

Resources for assessment must include access to:

- applicable documentation, such as legislation, regulations, codes of practice, workplace procedures, ships deviation book and operational manuals
- compass adjusting tools, equipment and materials currently used in industry.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2