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## Overview

This standard identifies the competences you need to set to work, test and trial marine computer control systems, in accordance with approved procedures. You will be required to use appropriate drawings, specifications and test documentation to set up, test and trial the various items of equipment. You will be expected to use the specified/appropriate techniques to carry out the appropriate setting up, testing and trialling procedures, in the correct sequence, in order to integrate the various elements into the vessel integrated command and control network. The process will include fault identification, diagnosis and, if appropriate, the adjustments, corrections and rectification of the faults.

The equipment to be set up and tested will include mainframe computer suites (MCUs), peripheral interface units (PIUs), personal computers (PCs), and display and control consoles.

Your responsibilities will require you to comply with organisational policy and procedures for the computer system setting up, testing and trialling activities undertaken and to report any problems with the setting up, testing and trialling activities, components or equipment that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with a minimum of supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out and for safe working practice with due regard to mutual interference hazards.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying setting up, testing and trialling techniques and procedures to marine computer control systems. You will understand the computer systems being set to work and tested and their application and will know about the testing and trialling techniques, test equipment and methods, in adequate depth to provide a sound basis for carrying out the activities, correcting faults and ensuring that the system functions to the required specification, while maintaining the discretion called for in the setting to work.

You will understand the safety precautions required when carrying out the setting up and testing operations, in particular those relating to mutual interference hazards. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace

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## Performance criteria

### You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. follow all relevant setting up and operating specifications for the products or assets being configured
3. follow the defined procedures and set up the equipment correctly ensuring that all operating parameters are achieved
4. set to work, test and trial marine computer systems using appropriate methods and techniques
5. deal promptly and effectively with problems within your control and report those that cannot be solved
6. check that the configuration is complete and that the equipment operates to specification
7. complete relevant documentation in line with organisational procedures

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## Knowledge and understanding

### You need to know and understand:

1. the specific safety practices and procedures that you need to observe when carrying out the setting up, testing and trialling activities on marine computer control system (including any specific legislation, regulations and codes of practice for the activities, equipment or materials, especially those for the control of radiation hazards)
2. the health, safety and security classification requirements of the work area where you are carrying out the activities and the responsibility they place on you
3. the safety procedures that must be carried out before work is started on setting up the marine computer control systems
4. how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down of compartments in the case of fire or other major incident, first aid, fire fighting and resuscitation of personnel)
5. the protective equipment that you need to use for both personal protection (PPE) and protection of the system and others
6. the hazards associated with setting to work, testing and trialling marine computer control systems and with the tools and test equipment used and how they can be minimised
7. the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps, anti-static mats, special packaging and handling areas)
8. what constitutes a hazardous voltage and how to recognise victims of electric shock
9. how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers)
10. how to obtain and interpret drawings, standards, quality control procedures and test specifications used in the setting to work process (including BS and ISO schematics, symbols and terminology)
11. how to carry out currency/issue checks of the specifications you are working with
12. the correct operating procedures of the computer system being set to work, tested and trialled
13. the computer components to be set to work and their function within the vessel command and control capability
14. the adjustments/corrections/tuning required to bring the equipment/system to operational standard through full range parameters
15. the quality control procedures to be followed during the setting to work and testing operations
16. why electrical bonding and screening is critical and why it must be

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- both mechanically and electrically secure
  - 17. types of test equipment to be used and their selection for particular types of tests
  - 18. how to calibrate the test equipment to be used, or the organisational procedures for ensuring that the test equipment is maintained correctly calibrated
  - 19. how to conduct any necessary checks/tests to ensure the system integrity, functionality, accuracy and performance of the system and its dependencies
  - 20. how to recognise defects (such as under or over performance)
  - 21. the various fault finding techniques that can be used if the system fails the test
  - 22. the displaying/recording of test results and the documentation to be used
  - 23. how to interpret the test readings obtained, and the significance of the readings gained
  - 24. how to analyse the test results
  - 25. authorisation procedures for changes to test procedures
  - 26. the importance of ensuring that test equipment is used only for its intended purpose and within its specified range and limits
  - 27. potential problems or errors that could occur with the setting to work, testing and trialling operations and how these can be overcome
  - 28. the environmental control and company operating procedures relating to the testing and trialling activities
  - 29. the importance of ensuring that the completed installation is to the cleanliness category prescribed and is secure and left in a recognised condition/called for state of readiness
  - 30. the documentation required and the procedures to be followed following the test
  - 31. the extent of your own responsibility and whom you should report to if you have problems that you cannot resolve

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### Scope/range related to performance criteria

1. Carry out all of the following during the setting to work, testing and trialling activities:
  1. use the correct issue of the agreed setting and testing procedures and quality documentation
  2. adhere to risk assessment, COSHH and other relevant safety and security standards
  3. check that all tools and test equipment are within calibration dates
  4. obtain clearance to work on the system, and observe power isolation and safety procedures
  5. provide safe access and working arrangements for the testing area
  6. carry out the setting to work, testing and trialling activities, using safe and approved techniques and procedures, including mutual interference hazard control
  7. ensure that the testing equipment is operated within its specification range
  8. return all tools and equipment to the correct location on completion of the activities
  9. leave the work area in a safe condition and to the prescribed category of cleanliness and security classification
2. Set to work, test and trial **two** of the following marine computer control systems:
  1. mainframe
  2. personal computers(PCs)
  3. peripheral interface units
  4. highway remote controls
  5. linking highways
3. Set to work, test and trial **two** of the following marine computer control system sub-assemblies:
  1. computer hardware
  2. sensor interface units
  3. control panels
  4. highway local and remote controls
  5. symbol generators
  6. display units

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7. display mode select panels
  4. Carry out adjustments and tests, to include **all** of the following:
    1. applying a dummy load
    2. simulation test
    3. applying real time loads
    4. signal injection tests
  5. Carry out **one** of the following trials on the computer control system:
    1. harbour acceptance trials
    2. sea acceptance trials
  6. Deal with **two** of the following levels of complexity during the setting up and testing activities:
    1. equipment with no faults
    2. system integration
    3. equipment with faults
    4. equipment with intermittent faults
  7. Use **three** of the following fault finding techniques during the setting up and testing activities:
    1. six point
    2. half-split
    3. input-to-output
    4. injection and sampling
    5. function testing
    6. equipment self-diagnostics
    7. emergent problem sequence
    8. unit substitution
  8. Complete relevant documentation in line with organisational procedures using **one** of the following:
    1. installation record
    2. acceptance documentation
    3. system log
    4. job cards
    5. other specific recording methods

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9. Carry out tests in compliance with **one** of the following standards:
1. BS or ISO standards and procedures
  2. customer (contractual) standards and requirements
  3. company standards and procedures
  4. specific equipment requirements/manufacture's data
  5. recognised compliance agency/body's standards
  6. other accepted international standards

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## Behaviours

### **Behaviours:**

You will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as:

- strong work ethic
- positive attitude
- team player
- dependability
- responsibility
- honesty
- integrity
- motivation
- commitment



SEMME3017

Setting to work, testing and trialling marine computer equipment and systems



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