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## Overview

This standard identifies the competences you need to carry out scheduled maintenance tasks on marine electrical and electronic equipment, in accordance with approved procedures. You will be required to carry out scheduled maintenance tasks on marine electrical equipment such as single, three phase and direct current power supply and control systems, motors and starters, switchgear and distribution panels, control systems, communication systems, weapon systems, navigation systems, sensor systems, computer control systems equipment and peripheral devices, lighting and alarm systems, electrical plant, luminaires, portable appliances, electrically powered domestic equipment and other specific electrical equipment, in order to minimise down time and ensure that the equipment performs at optimal levels and functions to specification.

Your responsibilities will require you to comply with organisational policy and procedures for the scheduled maintenance tasks undertaken and to report any problems with these activities, or with the tools and equipment that are used that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You must ensure that all tools, equipment and materials used in the maintenance activities are removed from the work area on completion of the activities and that all necessary job/task documentation is completed accurately and legibly. You will be expected to work with either a high level of supervision or as a member of a team. You will take personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. When working in a team, you must demonstrate a significant personal contribution to the team activities in order to satisfy the requirements of the standard and competence in all the areas required by the standard must be demonstrated.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will enable you to adopt an informed approach to applying scheduled maintenance procedures to marine electrical and electronic equipment. You will have an understanding of the process of implementing scheduled maintenance tasks, the importance of carrying them out at specific times and in the specified sequence, and of recording the outcomes and actions taken. In addition, you will be expected to report where the outcome of the scheduled maintenance identifies a requirement for further investigation or remedial work.

You will understand the safety precautions required when carrying out the scheduled maintenance activities, especially those for isolating the equipment. You will also understand your responsibilities for safety and the importance of taking the necessary safeguards to protect 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 the relevant maintenance schedules to carry out the required work
3. carry out the maintenance activities within the limits of your personal authority
4. carry out the maintenance activities in the specified sequence and in an agreed time scale
5. report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
6. complete relevant maintenance records accurately and pass them on to the appropriate person
7. dispose of waste materials in accordance with safe working practices and approved procedures

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## Knowledge and understanding

### You need to know and understand:

1. the health and safety requirements of the area in which the scheduled maintenance tasks are to take place and the responsibility these requirements place on you
2. how to recognise and deal with emergencies and the procedures to be followed (such as methods of safely evacuating and closing down compartments in the case of fire or other major incident)
3. the isolation procedures or permit-to-work procedure that applies to the marine electrical equipment being maintained
4. the specific health and safety precautions to be applied during the scheduled maintenance tasks and their effects on others
5. the precautions to be taken to prevent electrostatic discharge (ESD) damage to circuits and sensitive components (such as use of earthed wrist straps)
6. what constitutes a hazardous voltage and how to recognise victims of electric shock
7. how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers)
8. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the maintenance activities
9. hazards associated with carrying out scheduled maintenance tasks on marine electrical equipment (such as live electrical components, stored energy, misuse of tools) and how they can be minimised
10. how to obtain and interpret information from job instructions, drawings and specifications used in the maintenance process
11. the various checks to be carried out during the scheduled maintenance procedure
12. the procedure for obtaining consumables to be used during the scheduled maintenance activity
13. methods of checking that components are fit for purpose, how to identify defects and wear characteristics and the need to replace 'lived' items (such as seals, filters and gaskets)
14. how to check that any replacement components meet the required specification/operating conditions
15. how to make appropriate sensory checks (such as sight, sound, smell and touch)
16. the appropriate built in test equipment instructions (BITE) to be adopted during the maintenance activity
17. how to make adjustments to components/assemblies to ensure that they function to specification
18. the basic principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact
19. how to complete scheduled maintenance records/logs/reports, in accordance with company policy and procedures

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20. the equipment operating and control procedures and how to apply them in order to carry out scheduled maintenance
  21. why tool/equipment control is critical and what to do if a tool or piece of equipment is unaccounted for on completion of the activities
  22. the problems that can occur whilst carrying out the scheduled maintenance tasks and how they can be avoided
  23. the organisational procedure(s) to be adopted for the safe disposal of waste of all types of materials
  24. the extent of your own authority 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 scheduled maintenance tasks:
  1. undertake the maintenance activities in conjunction with others to cause minimal disruption to normal working
  2. use the correct issue of maintenance documentation (such as drawings, manuals, maintenance records)
  3. adhere to risk assessment, COSHH and other relevant safety standards
  4. confirm with the authorised person that the equipment is ready for carrying out the scheduled maintenance
  5. ensure the safe isolation of equipment (such as mechanical, electrical, gas, air or fluids)
  6. ensure that safe access and working arrangements have been provided for the maintenance area
  7. carry out the scheduled maintenance tasks, using appropriate techniques and procedures
  8. dispose of waste items in a safe and environmentally acceptable manner
  9. leave the work area in a safe and tidy condition
2. Carry out scheduled maintenance on four of the following groups of electrical equipment:
  1. motors and starters
  2. switchgear and distribution panels
  3. lighting and alarm systems
  4. electrical plant
  5. wiring enclosures (such as conduit, trunking or traywork)
  6. electrically powered domestic equipment
  7. portable appliances
  8. computer equipment and peripheral devices
  9. other specific marine electrical equipment
3. Carry out ten of the following scheduled maintenance activities:
  1. removing excessive dirt and grime
  2. making sensory checks (such as sight, sound, smell, touch)
  3. replacing 'lived' consumables (such as seals, batteries, brushes, lamps, filters)
  4. monitoring the condition/deterioration of components (such as cables, connectors, switches, safety devices)
  5. determining/measuring electrical characteristics (such as voltage current drawn, resistance, continuity)

6. checking that any safety equipment or controls are operating correctly
7. checking the operation of instrumentation (such as gauges, sensors and indicators)
8. carrying out and/or checking built in test equipment (BITE) self-analysis data
9. making adjustments to components and/or connections
10. tightening fastenings to the required torque
11. re soldering joints/connections
12. checking the integrity and security of earth bonding
13. replacing cables and connectors
14. removing/updating software
15. reviewing and checking equipment operation and performance

plus both of the following:

16. recording the results of the scheduled maintenance activity
17. reporting or taking action with regard to any defects that require immediate attention

4. Maintain marine electrical equipment, in accordance with one of the following standards:

1. BS, EN or ISO standards and procedures
2. customer (contractual) standards and requirements
3. company standards and procedures
4. specific equipment requirements/manufacturers data
5. recognised compliance agency/body's standards
6. other accepted international standards

5. Complete one of the following maintenance records and pass it to the appropriate person:

1. job cards
2. system log
3. maintenance logs or reports
4. vessel wiring documentation
5. work authorisation documents
6. other specific reporting method

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## 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

SEMME2010

Carrying out scheduled maintenance on marine electrical and electronic equipment



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