
Overview

This standard identifies the competences you need to carry out scheduled maintenance on communication-electronic systems, in accordance with approved procedures. You will be required to carry out scheduled maintenance tasks on range of communication-electronic systems, sub-systems or assemblies. You will need to carry out the maintenance activities to minimise downtime, and to ensure that the maintained system performs at the required level 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 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 to instructions, alone or in conjunction with others, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will provide an informed approach to applying scheduled maintenance procedures to communication-electronic systems. You will have an understanding of the process of implementing scheduled maintenance tasks, the importance of carrying them out at specific times, and of recording their outcomes and actions taken. In addition, you will be expected to report where the outcomes identify the need for further investigation or maintenance work.

You will understand the safety precautions required when carrying out the scheduled maintenance activities, especially those for isolating the equipment, and for taking the necessary safeguards to protect yourself against direct or indirect electric shock. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

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

Knowledge and understanding

You need to know and understand:

1. the health and safety requirements of the area in which the scheduled maintenance activity is to take place, and the responsibility they place on you
2. the isolation and lock-off procedure or permit-to-work procedure that applies to the scheduled maintenance activities (electrical isolation, locking off switch gear, removal of fuses, placing maintenance warning notices, proving the isolation has been achieved and secured)
3. isolation procedures unique to communication-electronic systems, sub-systems or assemblies
4. the specific health and safety precautions needed to be applied during the scheduled maintenance procedure and their effects on others
5. the hazards associated with carrying out scheduled maintenance activities on communication-electronic systems, sub-systems or assemblies (such as exposure to live conductors, misuse of tools), and how they can be minimised
6. what constitutes a hazardous voltage and how to recognise victims of electric shock
7. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the maintenance activities
8. how to reduce the risks of a phase to earth shock (such as insulated tools, rubber matting and isolating transformers)
9. how the maintenance activities may affect the work of others, and the procedure for informing them of the work to be carried out
10. the procedures and precautions to be adopted to eliminate electrostatic discharge (ESD)
11. how to obtain and interpret information from job instructions and other documentation used in the maintenance activities (such as drawings, specifications, manufacturers' manuals, BS7671/IET regulations, symbols and terminology)
12. the maintenance schedules and methods to be followed in order to comply with company procedures for scheduled maintenance
13. the various checks to be carried out during the scheduled maintenance procedure
14. how to make sensory checks (by sight, sound, smell or touch)
15. company policy on repair/replacement of systems, sub-systems and assemblies during the scheduled maintenance process
16. methods of checking that systems, sub-systems and assemblies are fit for purpose, and the need to replace 'lived' items (such as batteries)
17. how to make adjustments to systems, sub-systems and assemblies to ensure they function correctly
18. the generation of maintenance documentation and/or reports

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- following the maintenance activity
19. problems that can occur during the scheduled maintenance activity, and how they can be overcome
 20. the organisational procedure to be adopted for the safe disposal of waste of all types of materials
 21. the extent of your authority and to whom you should report if you have problems that you cannot resolve

Scope/range related to performance criteria

1. Carry out **all** of the following during the maintenance activities:
 1. undertake the maintenance activities to cause minimal disruption to normal working
 2. use the correct issue of maintenance documentation (such as drawings, manuals, maintenance records)
 3. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
 4. confirm with the authorised person that the equipment is ready for carrying out the scheduled maintenance
 5. ensure the safe isolation of equipment
 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. re-connect and return the equipment to service on completion of the maintenance activities
 9. dispose of waste items in a safe and environmentally acceptable manner
 10. leave the work area in a safe and tidy condition

2. Carry out scheduled maintenance activities on **two** communication-electronic systems, sub-systems or assemblies (at least **one** of which must be selected from group **A**):

note: Any of the items below can be identified as a system, sub-system or assembly in its own right

group A – communication-electronic

1. transmitters (such as HF, VHF, UHF, microwave)
2. transceivers (such as HF, VHF, UHF, microwave)
3. receivers (such as HF, VHF, UHF, microwave)
4. signal processing (analogue) (such as radar anti-clutter, comms audio and AGC stages)
5. signal processing (digital) (such as digital MTI, multiplexers, AGC)
6. aerial systems (such as phased arrays, long wire and parabolic reflectors)
7. transmission lines (such as optical fibres, co-axial, baluns, twin wire, waveguide)
8. display systems (such as CRT, plasma, TFT, TV tab, LED)
9. man-machine interface (such as IS/ICT equipment or peripherals: keypads, keyboards, microphones)
10. electro-optical systems (such as cameras, thermal imaging, targeting systems)
11. hydraulic-electrical systems (such as hydraulic motors, HSUs and actuators)
12. cryptographic systems (such as data encryption and de-encryption)
13. built-in test equipment
14. data network systems (such as LANs, WANs)

15. data network interfaces (such as switch, router, bridging networks)
16. any other identifiable electronic system, sub-system or assemblies

group B - associated equipment

17. environmental control systems (such as temperature, humidity, vibration, shock, alarm and protection)
18. electro-mechanical systems (such as servos, motors, relays, complex switches)
19. power generation systems (such as fixed/transportable AC/DC generators, batteries)
20. power distribution systems (such as single phase/3-phase distribution panels)
21. power supply control systems (such as voltage/current series/shunt regulator/stabiliser)
22. hybrid systems (such as ADC, DAC)

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3. Carry out **ten** of the following scheduled maintenance activities:

1. removing excessive dirt or grime
2. making sensory checks (such as sight, sound, smell or touch)
3. visual examination and testing of a system against the maintenance schedule
4. replacing 'lived' consumables
5. monitoring the condition/deterioration of components (such as connectors switches, contactors, safety devices)
6. carrying out system self-analysis checks
7. making routine adjustments
8. carrying out leak checks on connections (where appropriate)
9. testing the system operation
10. recording the results of the maintenance activity, and reporting any identified or potential defects
11. checking the condition of cables
12. checking the integrity of connections
13. making insulation resistance checks
14. recording the results of the scheduled maintenance activity
15. reporting or taking action with regard to any defects that require immediate attention (such as replacing non-'lived' components)

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4. Ensure that the maintained system meets **one** of the following quality and accuracy standards:

1. organisational guidelines and codes of practice
2. equipment manufacturer's operation range
3. BS, ISO and/or BSEN standards

4. Ministry of Defence (MOD) standards

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5. Complete **one** of the following and pass it to the appropriate people:

1. job cards
2. maintenance log and action report
3. permit to work/formal risk assessment
4. company-specific documentation

