

Carry out planned maintenance of signalling equipment

Overview

This standard identifies the competencies you need to carry out the planned maintenance of signalling systems and equipment. The signalling equipment in this standard can be for overground or underground rail transportation systems and can apply to the European Train Control System (ETCS).

You will be required to use the appropriate tools and equipment throughout the maintenance activities and to apply a range of methods and techniques to maintain the equipment. Where appropriate, you may also work with computers or electronic controllers, making connections, maintaining hardware and loading and updating software. The maintenance activities will include correctly interpreting diagnostic indications and alarms, completing integrity checks on your work, initiating testing as appropriate, identifying where independent testing is required, in line with your permitted authority and working with others to ensure that the maintained equipment functions to the required specification.

On completion, you will ensure the work area is cleared of all tools, equipment, and materials, and complete job documentation accurately. You will be expected to work to instructions, alone or in conjunction with others. The maintenance activity may be carried out as a team effort, but you must demonstrate a significant personal contribution to the activities to satisfy the requirements of the standard and you must demonstrate competence in all the areas required by the standard.

Safety is a key theme; you must practice and demonstrate safe working methods, understanding and implementing necessary precautions to protect yourself and others.

Performance criteria

You must be able to:

- P1 maintain safe working practices and comply with all relevant health and safety regulations, directives, and guidelines
- P2 identify any necessary changes to safety requirements upon site arrival and report to the relevant person(s) without delay
- P3 identify the area of work and the equipment to be maintained
- P4 source and interpret the relevant maintenance schedules to carry out the required work
- P5 identify and analyse discrepancies in information and take appropriate remedial action
- P6 use authorised maintenance methods where existing instructions are insufficient
- P7 carry out the maintenance activities within the limits of your own authority
- P8 carry out the maintenance activities in the specified sequence and in an agreed timescale ensuring that the work does not interfere with the operational railway
- P9 select and use the correct measuring instruments and other tools and equipment
- P10 interpret the relevant system documentation, diagnostics, indications and alarms
- P11 identify, evaluate and report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
- P12 complete the relevant maintenance records, process them in accordance with requirements and pass them on to the appropriate person(s)
- P13 observe sufficient operations of the equipment to confirm it is functioning correctly
- P14 address problems within your control and report unresolved issues

Knowledge and understanding

You need to know and understand:

K1 the relevant health and safety regulations, directives, guidelines, and safe working practices and procedures defined by your organisation, as appropriate to the activity and your working area

K2 how to locate and access the site

K3 how to check authorisation is in place for maintenance activities

K4 how to secure the system for maintenance purposes

K5 how to protect operational signalling equipment from the maintenance activity

K6 the isolation and lock-off procedure or permit-to-work procedure that applies to the system (such as electrical isolation, locking off switchgear, placing of warning notices, proving the isolation has been achieved and secured)

K7 the classification of different voltage levels and the authority requirements for working on them

K8 what constitutes a hazardous voltage/current and how to recognise victims of electric shock

K9 how to reduce the risks of an electric shock (such as insulated tools, rubber matting and isolating transformers)

K10 the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the maintenance activities

K11 hazards associated with carrying out signalling maintenance activities (such as stored energy, radio frequency radiation, electrical supplies, electrical/electronic interfaces, using damaged or ill-maintained tools and equipment, not following laid-down procedures), and how to minimise these and reduce any risks

K12 how to locate and identify the equipment to be worked on

K13 the correct mode of operation of signalling equipment to be maintained

K14 what constitutes a signalling equipment defect and the implication on safety and performance

K15 the activities which may compromise system functionality and integrity

K16 how to identify, evaluate and deal with influencing factors whilst carrying out the maintenance tasks, including environmental factors

K17 how to source, interpret and follow maintenance schedules, procedures, instructions specifications, site and equipment diagrams

K18 the methods, techniques and procedures for the maintenance of signalling systems and equipment

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K19 the principles of operation of the equipment to be maintained

K20 the types of operational constraints that could occur when carrying out signalling maintenance activities

K21 your organisation's procedures relating to maintenance records and documentation including how to access and version control

K22 your organisation's procedures for the use, care and control of tools and equipment including calibration

K23 the procedures and precautions to be adopted to eliminate electrostatic discharge (ESD) hazards when working with and handling electronic devices

K24 when independent testing is required

K25 how to check the maintenance activity to ensure compliance with the original specification

K26 the importance of integrity checks, including how and when they should be carried out

K27 the types of damage or disturbance that could occur to operational equipment when undertaking a maintenance activity

K28 your organisation's procedures for disposing/storing of waste items

K29 the relevant reporting lines and procedures that are approved by your organization

K30 the limits of your own authority and responsibility and those of others involved

Scope/range related to performance criteria

1.
Types of health and safety legislation, regulations and safe working practices and procedures, as applicable to the work location and activities, could include:
2.
Identify the access requirements related to one of the following types of site equipment locations:
3.
Carry out planned maintenance of one of the following types of signalling equipment:
4.
Use the following types of tools and equipment as applicable to the equipment being maintained:
5.
Carry out the following maintenance activities as applicable to the equipment being maintained:
6.
Ensure that the maintenance activities comply with one of the following:
7.
Complete the relevant maintenance records, to include one of the following, and pass it to the appropriate people:

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