



Australian Government

UEERS0022 Find and repair rail signalling system faults

Release: 2

UEERS0022 Find and repair rail signalling system faults

Modification History

Release 2. Minor Change: Typographical error in prerequisites corrected.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

This unit replaces and is equivalent to UEERS0004 Find and repair rail signalling system faults.

Modifications this release include:

- Performance criteria 1.9, 2.2 and 3.4 added.
- Performance and Knowledge Evidence updated for clarity.

Application

This unit involves the skills and knowledge required to find and repair rail signalling system faults.

It includes preparing to find and repair signalling system faults, using appropriate fault-finding techniques, repairing or rectifying faults and completing reporting requirements.

Persons achieving competence in this unit will need to fulfil the applicable state/territory legislated rail safety requirements and comply with relevant codes of practice, rules and/or guidelines.

No other licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEERS0027 Maintain computer-based interlocking systems

or

UEERS0034 Maintain vital relay interlocking systems

Competency Field

Rail Signalling

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to find and repair rail signalling system fault/s

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified, obtained and clarified
- 1.2** Hazards are identified, WHS/OHS risks assessed, and control measures and workplace procedures are implemented in preparation for work
- 1.3** Safety hazards that have not previously been identified are documented on job safety assessments, risks are assessed, and control measures determined and implemented in consultation with appropriate person/s
- 1.4** Appropriate person/s is consulted to determine the nature and scope of the fault/s and to coordinate effectively with others affected by the fault/s
- 1.5** Likely causes of the fault/s and order of probability are determined from system data and historical trends
- 1.6** Impact of the fault on system is ascertained and appropriate person/s notified in accordance with workplace procedures
- 1.7** Materials needed to find and repair the fault are obtained in accordance with workplace procedures and checked against job specifications
- 1.8** Tools, equipment and testing devices needed to find and repair the fault/s are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.9** Authorisation to take temporarily out of service or disable systems is obtained in accordance with workplace procedures
- 1.10** Circuits/equipment are inspected and checked as being isolated, where necessary, in strict accordance with operational procedures and WHS/OHS requirements

2 Find and repair rail signalling system faults

- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
- 2.2** On-track safe working requirements are identified and applied in accordance with workplace procedures and safety management system
- 2.3** Signalling system performance parameters/standards are applied to appropriate fault-finding techniques
- 2.4** Inspection and tests are conducted to determine the type and location of fault/s
- 2.5** Wiring system is visually inspected for physical damage or installation defects, as required
- 2.6** Methods for dealing with unplanned situations are selected on the basis of safety, operational requirements and specified work outcomes
- 2.7** Ongoing inspections and checks of the signalling system are undertaken to confirm the continued rectification of the fault
- 2.8** Fault/s are located and identified efficiently, without waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy practices
- 2.9** Signalling system faults are rectified in accordance with workplace procedures

3 Complete repair/s to rail signalling system

- 3.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
- 3.2** Unresolved faults are reported to appropriate person/s for further action in accordance with workplace procedures
- 3.3** Inspection and test results, actions taken or recommended are documented and appropriate person/s notified in accordance with workplace procedures
- 3.4** On-track safe working requirements are removed in accordance with workplace procedures and safety management system
- 3.5** Component fault/s, test result/s, authorisation/s and permit/s documentation are completed to provide an

accurate database and facilitate follow-up action and relevant reports

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Essential operating conditions include:

- locating and repairing faults on three different types of rail signalling equipment/systems.

Unit Mapping Information

This unit replaces and is equivalent to UEERS0004 Find and repair rail signalling system faults.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERS0022 Find and repair rail signalling system faults

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- Performance and Knowledge Evidence updated for clarity.

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 two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - implementing workplace procedures and practices
 - using risk control measures
 - applying rail safe working practices and rail safety regulations
- locating and repairing rail signalling system faults, including:
 - interpreting plans and specifications correctly
 - identifying and interpreting fault history
 - confirming fault history and symptoms through observation and application of first-line tests
 - identifying faults efficiently
 - rectifying faults promptly using appropriate diagnostic techniques
 - minimising interruption to rail traffic and services
 - using testing equipment and tools correctly and safely
 - confirming the integrity of the signalling system
 - completing relevant technical reports, documentation and records
- applying relevant industry standards and codes of practice
- applying sustainable energy principles and practices
- dealing with unplanned events.

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:

- rail signalling system fault finding and repair, safe working practices and relevant standards, codes and regulations, fault-finding and diagnostic techniques including:
 - establishing an accurate description of the fault situation by appropriate questioning of client or operator
 - questioning techniques to efficiently and effectively obtain a description of a fault situation from a client/operator
 - confirming the fault history and symptoms through observation and application of first-line tests
 - drawing valid conclusions from observations
 - identifying concepts of broad first-line testing
 - in the absence of the client or operator, to establish the symptoms through application of systematic tests and observation
 - identifying appropriate diagnostic tests for given symptoms using manufacturers' charts, handbooks and specification sheets
 - using results of systematic tests to identify symptoms
- rail signalling system fault finding including:
 - system operational and safety requirements
 - common mechanical faults, symptoms and testing
 - common electrical faults, symptoms and testing
 - common control faults, symptoms and testing
- rail signalling system repairs including:
 - system operational and safety requirements
 - fault/circuit/system isolation
 - repairing/replacing faulty components
 - component testing
 - reconnection of component/circuit/system
- relevant job safety assessments or risk mitigation processes, including possessions protection and management
- relevant industry standards, codes of practice, regulations and WHS/OHS legislated requirements
- relevant manufacturer specifications and manuals
- relevant workplace documentation, policies and procedures.

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 must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

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.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to locating and repairing rail signalling system faults
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>