



Australian Government

Assessment Requirements for UEERS0020

Apply rail signalling principles

Release: 1

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Modification History

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

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:

- reading and interpreting relevant railway signalling standards and procedures
- reading a signal arrangement plan and identifying the signal equipment and its location on the rail network
- reading a signalling circuit drawing and identifying the equipment type
- using relevant standard nomenclature to identify basic signalling functions associated with signals, track circuits and point machines
- identifying the relevant technical records and documentation for construction and maintenance activities
- applying rail safe working practices and relevant industry standards, codes and rail safety regulations
- identifying relevant requirements for maintenance and construction signalling activities, including:
 - work health and safety (WHS)/occupational health and safety (OHS)
 - signalling safety practices and principles when working on signalling circuits
 - workplace procedures and practices
 - risk control measures.

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:

- relevant industry standards for railway signalling and where they can be accessed
- purpose and importance of signalling standards
- the scope of AS7711 Signalling Principles
- the role of the rail regulator and investigation organisations
- rail safety legislative requirements
- train dynamics including:
 - types of rail vehicles, including suburban/country passenger, freight, maintenance

- vehicles and heritage/tourism
 - braking distance
 - gradients/terrain
 - sighting distance
- essentials of safe movement of trains including:
 - the role of the signalling system in enabling safe and efficient movement of trains
 - standard operating conditions as per operating timetable/schedule
- purpose of rail signalling including:
 - safe distances between rail vehicles
 - safe movement of rail vehicles
 - conflicting movement between rail vehicles
 - how the signalling system provides driver information
 - how the driver interprets the information to safely control a train
 - restrictions on the signaller and driver following an operation error, including signals passed at stop, driver exceeding speed requirement and signaller setting incorrect route
- railway signalling principles, including:
 - maintaining a safe distance between trains on the same track to prevent a collision with a preceding train
 - preventing conflicting signal movements including vehicles entering a single line from opposing directions
 - safeguarding the movement of trains at points and crossings and ensuring no conflicting movements at junctions
 - maintaining the route set during the passage of a train
 - regulating the passage of trains according to the service density and speed required
- identification and purpose of signalling equipment including:
 - signals, point machines, interlockings, train detection, level crossings, power supplies, signal control panels, non-vital telemetry, wayside protection systems
 - signal plans and nomenclature
- railway signalling practice principles:
 - the purposes and role of independence when changing the configuration of signalling
 - that only signalling design documentation that has been approved can be used
 - the purpose of applying standards and procedures for all work
 - the purpose of recording the results of work activities
 - the purpose of railway signalling documentation version control
 - the signalling equipment is tested to ensure it performs to the design
- signalling systems design safety characteristics including:
 - a failure of an item of equipment will only result in a safe state for the rail system (Failsafe)
 - design of the equipment and the circuits protects against a single failure and ensures a safe state.

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 and documentation currently used in industry
- resources that reflect current industry practices in relation to the application of signalling principles
- applicable documentation, including workplace procedures, standards and signalling designs.

Links

Companion Volume Implementation Guides are found in VETNet -

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