



Australian Government

UEERS0010 Install and maintain rail signalling power supplies

Release: 1

UEERS0010 Install and maintain rail signalling power supplies

Modification History

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

Application

This unit involves the skills and knowledge required to install/maintain rail signalling power supplies.

It includes preparing and installing/maintaining rail signalling power supplies by working safely to installation/maintenance industry standards, matching equipment with that specified for location, terminating cables and connecting wiring compliance, functional testing, certifying and reporting.

Persons achieving competence in this unit will need to fulfil the applicable state/territory legislated rail safety requirements and to 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

UEERS0001 Assemble and wire internal electrical rail signalling equipment

Competency Field

Rail Signalling

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to

PERFORMANCE CRITERIA

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

1.1 Work health and safety (WHS)/occupational health and

install/maintain rail signalling power supplies		safety (OHS) requirements and workplace procedures for a given work area are identified, obtained and clarified
	1.2	Hazards are identified, risks assessed, and control measures and workplace procedures implemented
	1.3	Safety hazards which have not previously been identified are noted on job safety assessments and risk control measures are implemented
	1.4	Scope of work and location of power supply are determined by site inspection and from job instructions, specifications and/or diagrams
	1.5	Materials needed for the installation/maintenance work are obtained in accordance with workplace procedures and checked against job specifications
	1.6	Tools, equipment and testing devices needed to install/maintain power supplies are obtained in accordance with workplace procedures and checked for correct operation and safety
2	Install/maintain rail signalling power supplies	
	2.1	WHS/OHS risk control measures and workplace procedures for carrying out work are followed
	2.2	Power supply is checked to comply with technical industry standards, job specifications and requirements
	2.3	Wiring is run and cables terminated to comply with technical industry standards, job specifications and requirements
	2.4	Inspection and tests are conducted to ensure installed/maintained power supply complies with job specifications and functions as intended
	2.5	Installation/maintenance of power supply is carried out efficiently, without waste of materials, damage to apparatus, the surrounding environment or services using sustainable energy practices
	2.6	Correct functioning of equipment is established from reference to manuals, system specifications and commissioning data
	2.7	Faults are identified in accordance with relevant technical information of power supplies and

		fault-finding techniques
	2.8	Faulty, worn, damaged or insecure components are replaced, repaired or secured in accordance with manufacturer specifications and workplace procedures
	2.9	Existing methods for dealing with unplanned situations are discussed with appropriate person/s and documented in accordance with workplace procedures
3	Complete rail signalling power supplies installation/maintenance	
	3.1	WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Work completion is documented and appropriate person/s notified in accordance with workplace procedures and relevant reports produced

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.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEN105A Install and maintain rail signalling power supplies.

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 UEERS0010 Install and maintain rail signalling power supplies

Modification History

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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 one occasion and include:

- interpreting specifications and circuit diagrams correctly
- installing/maintaining power supplies correctly
- using appropriate diagnostic and fault-finding techniques
- using tools and test instruments correctly
- following relevant codes of practice, procedures and requirements
- completing relevant technical reports, records and documentation
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - implementing workplace procedures and practices
 - using risk control measures
- applying sustainable energy principles and practices
- completing installation/maintenance of rail signalling power supplies
- planning installation/maintenance of rail signalling power supplies.

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 signal power supply installation/maintenance, safe working practices and relevant standards, codes and regulations for basic rail operations, including:
 - rail terminology encompassing:
 - rail signalling nomenclature
 - rail signalling symbols
 - state/territory standards
 - standard glossary of terms relevant to each state/territory and where the standard originated from and how new standards are developed to meet a national standard
 - train dynamics encompassing:
 - types of rail vehicles, including suburban/country passenger, freight, maintenance

- vehicles and heritage/tourism
- braking distance
- gradients/terrain
- sighting distance
- the relationship to the signalling arrangement plan/scheme
- essentials of safe movement of trains encompassing:
 - the role of the signalling system in enabling safe and efficient movement of trains
 - standard operating conditions as per operating timetable/schedule
 - degraded signalling system performance, including a partial failure of signalling infrastructure or a system override
- abnormal train operating conditions, including signaller operation error, driver operation error, train delayed and train breakdown
- emergency train and signal system operation
- scheduled infrastructure maintenance
- unscheduled infrastructure maintenance, including civil, signalling, traction and overhead
- purpose of rail signalling encompassing:
 - 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
- enterprise work activities records
- purpose and extent of maintaining work activities records in an enterprise
- types of records for maintaining work activities in an enterprise
- methods for recording and maintaining work records
- work records required by regulation requirements
- environmental and heritage awareness
- purpose of environmental and heritage regulation
- typical issues affecting electrotechnology services and systems
- meeting requirements
- rail signalling, power supplies
- equipment and their components encompassing:
 - transformers
 - batteries
 - converters
 - inverters
 - uninterruptable power supplies (UPS)

- generator
- solar panels
- earthing
- surge protection
- switchboards
- high voltage (HV) and low voltage (LV) power distribution
- automatic power changeover panels
- wiring and termination
- operating principles and parameters encompassing:
 - normal mode operation
 - alarm mode
 - redundancy mode
 - power interruption/standby mode
 - interpreting circuits diagrams to evaluate correct operation and relationship to other signalling circuits
- servicing procedures encompassing:
 - maintenance documentation
 - coordination/planning sequence
 - operational test procedures
 - scheduled/preventative maintenance
 - unscheduled/corrective maintenance
 - certifying power supply equipment (commission and de-commission), including certifying procedures applicable for compliance with rail operator and/or enterprise standards
- safe working practices and relevant standards, codes and regulations
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace 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 installing/maintaining rail signalling power supplies
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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