



Australian Government

UETDRSB015 Maintain static var compensators (SVC)

Release: 1

UETDRSB015 Maintain static var compensators (SVC)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain high voltage static var compensators (SVC) in the electricity supply industry (ESI).

It includes reactive power flow, transformers, and main SVC reactive components.

It also includes control systems, thyristor valves, cooling equipment, protection systems, and use of appropriate tools and equipment.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

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|----------------------------------|---|
| 1 Prepare to maintain SVC | 1.1 Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined

1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements

1.3 Hazards are identified, risks assessed, and control measures identified and applied

1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements

1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order

1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required

1.7 Worksite is prepared in accordance with the work plan and workplace requirements |
| 2 Maintain SVC | 2.1 Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored

2.2 Work permits are received and signed in accordance with workplace requirements

2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements |

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| | 2.4 | SVCs are maintained in accordance with workplace requirements |
| | 2.5 | Incidents or unplanned events are responded to in accordance with workplace requirements |
| 3 Complete work and documentation | 3.1 | Completed work is checked for compliance against the work plan and workplace requirements |
| | 3.2 | Work permits are signed off in accordance with workplace requirements |
| | 3.3 | Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements |
| | 3.4 | Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements |
| | 3.5 | Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements |

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 UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSB30 Maintain high voltage power system static VAR compensators (SVC).

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRSB015 Maintain static var compensators (SVC)

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
 - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining at least two (2) of the following types of equipment:
 - static var compensator (SVC) power transformer
 - SVC auxiliary transformer
 - instrument transformer
 - capacitors
 - reactors
 - surge arresters
 - surge capacitors
 - low voltage system stabilisers
 - protection systems
- maintaining all of the following SVC components:
 - control system
 - thyristor valves, which may include gate electronics and ground level power supplies
 - cooling equipment, which may include pumping equipment and deionisers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- transformer types, characteristics and purpose
- principles of direct current (d.c.) auxiliary systems
- SVC human machine interface (HMI)
- main SVC reactive components, including:
 - thyristor controlled reactors (TCR)
 - thyristor switched reactors (TSR)
 - thyristor switched capacitors (TSC)
 - harmonic filters (HF)
- control systems, modes of operation, and characteristics, including:
 - voltage control
 - reactive power control
 - power factor control
 - susceptance control
 - transient response
 - power oscillation damping
- thyristor valves, including:
 - redundant thyristor levels
 - electrically triggered
 - optically triggered
 - gate electronics
 - ground level power supplies
- cooling equipment, including:
 - rating
 - instrumentation
 - pumps
 - deionisers
 - heat exchangers
- protection systems, including:

- reactor thermal overload
- capacitor peak repetitive overvoltage and unbalance
- neutral voltage displacement
- transformer differential
- point on wave switching
- reactive power flow
- surge arresters and capacitors
- low voltage system stabilisers
- use of appropriate tools and equipment.

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 workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational 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:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

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