



**Australian Government**

# **UETTDRSO45 Operate and monitor system SCADA equipment**

**Release: 1**

# UETTDRSO45 Operate and monitor system SCADA equipment

## Modification History

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

## Application

This unit covers the skills and knowledge to operate, monitor and control high voltage (HV) apparatus on the network via supervisory control and data acquisition (SCADA) control.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

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

## Pre-requisite Unit

Common Unit Group

UETTDREL15 Respond to power systems technical enquiries and requests

## Competency Field

System Operations

## Unit Sector

Not applicable.

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

#### **1 Plan and prepare for the operation, monitoring and control of system equipment**

### 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) practices/procedures and environmental and sustainable energy procedures, which may influence the preparation of the switching program, are reviewed**

and determined

- 1.2 System requirements are established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
        - 1.3 System and associated equipment operational prerequisites are identified and established in accordance with manufacturer and/or enterprise/site procedures
        - 1.4 System monitoring and control procedures are discussed with and/or directed to appropriate personnel in order to ascertain the project brief
        - 1.5 Operational parameters are ascertained from established policies, procedures and specifications
        - 1.6 Work roles and tasks are allocated according to requirements and individual competencies
        - 1.7 Work is prioritised and sequenced for the most efficient/effective outcome, completed within an acceptable timeframe, to a quality standard and in accordance with established procedures
        - 1.8 Liaison and communication issues with others/authorised personnel, authorities and clients are resolved and activities coordinated to carry out work
        - 1.9 Risk control measures are identified, prioritised and evaluated against the work schedule
        - 1.10 Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures
- 2 Carry out and coordinate the operation, monitoring and control of system equipment**
  - 2.1 WHS/OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimise waste are incorporated into the project in accordance with requirements and/or established procedures
  - 2.2 Decisions concerning the operation, monitoring and control of system equipment are made on the basis of safety and effective outcomes according to requirements and/or established procedures
  - 2.3 The effectiveness of the finished project is analysed in accordance with requirements and established

procedures

- |                                                                             |                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2.4</b>                                                                  | Technical advice is given regarding potential hazards, safety risks and control measures so that monitoring and preventative action can be undertaken and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures |
| <b>2.5</b>                                                                  | Essential knowledge and associated skills are applied to analyse specific data and compare it with compliance specifications to ensure completion of the project within an agreed timeframe according to requirements                                                       |
| <b>2.6</b>                                                                  | Work teams/groups are arranged/coordinated/evaluated to ensure planned goals are met according to established procedures                                                                                                                                                    |
| <b>2.7</b>                                                                  | Solutions to non-routine problems are identified and actioned, using acquired essential knowledge and associated skills, according to requirements                                                                                                                          |
| <b>2.8</b>                                                                  | Quality of work is monitored against personal performance agreement and/or established organisational and professional standards                                                                                                                                            |
| <b>3 Complete the operation, monitoring and control of system equipment</b> | <b>3.1</b> Final review of the operation, monitoring and control of system equipment is undertaken to ensure it complies with all requirements and include all specifications and documentations needed to complete the project                                             |
|                                                                             | <b>3.2</b> Appropriate personnel are notified of completion and reports and/or completion documents are finalised/commissioned                                                                                                                                              |
|                                                                             | <b>3.3</b> Reports and/or completion documents are submitted to relevant personnel/organisations for approval and, where applicable, statutory or regulatory approval                                                                                                       |

## 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 Companion Volume Implementation Guide.

## **Unit Mapping Information**

This unit replaces and is equivalent to UETTDRSO45A Operate and monitor system SCADA equipment.

## **Links**

UET Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

# Assessment Requirements for UETTDRSO45 Operate and monitor system SCADA equipment

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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 two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- performing on at least three (3) occasions the following:
  - evidence of switching programs involving the operation and monitoring of system equipment via supervisory control and data acquisition (SCADA)
- performing on at least two (2) occasions the following:
  - evidence of unplanned switching events involving the operation and monitoring of system equipment via SCADA
- demonstrating the following:
  - extracting data used in the analysis of network loading trends
- dealing with unplanned events on at least one (1) occasion.

## 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:

- SCADA systems encompassing:
  - SCADA system features and applications - industries in which SCADA systems are used, associate benefits of the package, features and facilities of different SCADA packages, and hardware requirements
  - reading mimics and animated graphics
  - trending - analysis of process to select data, viewing data and graphical representation of selected information, trend graphs and data matching
  - alarm logging - analysing select data, and corrective action of alarm status
- personal computer operating systems encompassing:
  - basic function, components and concepts
  - operating systems in use

- system installation and configuration
- computers applications encompassing:
  - application software types
  - configurations and preferences
  - use of particular software packages - word processor, spreadsheet, database, presentation software, web/document publisher, computer-aided drafting (CAD)/drawing packages, email client and business management
- transmission, distribution and rail systems encompassing:
  - relationship between the transmission, distribution and rail/tram system within an overall power system - different organisations responsible for generation, transmission, distribution and rail/tram; how they correlate and their functions
  - characteristics of a transmission, a distribution and a rail system - principal components; typical voltage levels and methods of transmission and distribution, including grid type transmission systems, radial, parallel and ring main feeders
  - relationship between an overhead and underground supply systems within an overall power system - advantages/disadvantages, applications and the basic steps for planning and installing an overhead and underground distribution system
  - single line drawings and layouts - drawings and layouts of transmission and distribution systems, including radial, parallel and ring main feeders, and the HV equipment associated with substations
- enterprise-specific policies and procedure instructions encompassing:
  - responsibilities and duty of care of employer and employee relationship
  - methods of obtaining the up-to-date information on enterprise policies and procedures
  - rules and regulations
  - induction into workplace - location of work area and storage area, timetable, uniform, personal wellbeing, housekeeping rules, emergency procedures and evacuation procedures
  - techniques when dealing with others - working in teams, customer relation, and complaint and issues procedures
  - overview of enterprise professional development - fire-fighting procedures, fatigue management, and training and competency development - understanding and promotion
- enterprise-specific WHS/OHS instructions encompassing:
  - standards, codes, legislation, supply authority regulations and specific enterprise regulations pertaining to WHS/OHS policies and procedures
  - methods of obtaining the up-to-date information on enterprise WHS/OHS policies and procedures
  - specific enterprise personal protection equipment (PPE) - type and application; where and when to be used; method of replacement; responsibility of maintenance, including cleaning, inspection and testing ;and emergency response, rescue, evacuation and first aid procedures
  - personal wellbeing – hygiene, fatigue/stress management and drugs/alcohol
  - WHS/OHS training - induction training, specific hazard training, specific task or equipment training, emergency and evacuation training, and training as part of broader

- programs such as equipment operation
- WHS/OHS records - audits; inspection reports; workplace health and environmental monitoring records; training and instruction records; manufacturer and supplier information, such as material safety data sheets (MSDS); registers; maintenance reports; workers compensation and rehabilitation records; and first aid/medical records
  - power distribution network documentation encompassing:
    - requirements for the use of manuals, system diagrams/plans and drawings; and for plans, such as work method statements for the control of WHS/OHS risks
    - types and application of power distribution network documentation drawings and documents - wiring and schematic diagrams, drawings and switching symbols, mechanical drawings dealing with the power distribution network, project charts, schedules, graphs, technical manuals and catalogues, and instructions/worksheets
    - interpretation of different diagrams and documentation on low voltage (LV) and high voltage (HV) systems - overhead distribution extensions, underground distribution extensions, distribution substations and street lighting systems.

## 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:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment, and SCADA equipment currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice, relevant modelling tools, drawings and operation manuals.

## Links

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