



Australian Government

Assessment Requirements for UETDRSO009 Manage power systems transmission networks

Release: 1

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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 2.0.

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
- demonstrating on at least three (3) occasions the management of system manipulations encompassing:
 - extra-high voltage (EHV) transmission network
 - EHV network manipulation to control loading on equipment
 - transformers with EHV windings (if applicable to enterprise equipment)
 - EHV busbars
 - EHV isolators
 - EHV switchgear (applicable to enterprise equipment)
- undertaking all of the following:
 - writing switching instructions
 - checking switching instructions
 - coordinating switching instructions
 - calculating plant loading
 - preparing and authorising EHV switching programs
 - monitoring switching progress
 - monitoring the status of access permits/authorities on EHV network equipment
 - ensuring network plant operates within design and regulatory requirements on a real time basis
 - dispatching and communicating with field crews to respond/rectify system abnormalities
 - applying and administering of supervisory control and data acquisition (SCADA) (if applicable to enterprise equipment)
 - analysing and diagnosing system failures
 - calculating and analysing network conditions on the interconnected EHV system
- monitoring and managing switching to:

- manage load
- manage voltage
- minimise loss
- maximise system reliability
- allow safe network access for maintenance activities
- allow safe network access for construction activities
- validating fault reports arising from system disturbances
- 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:

- coordinating access authority procedures encompassing:
 - specific enterprise processes, policies and procedures to be followed
 - processes of consultation, negotiation and coordination - clear and concise instructions and information, methods for the encouragement of feedback and contributions of information and ideas, and responsibilities of members of the team
 - techniques in analysing, planning, coordinating and organising work for a safe outcome and according to statutory requirements and regulations
 - techniques in the effective utilisation of available resources
 - techniques in the development of an access authority/permit and/or access authority/permit issuing procedures
 - techniques in facilitating and coordinating the delivery and issuing of access authorities
 - techniques in gathering, collating and confirming data on different worksites - electrical network diagrams for the specific worksite, earth access authorities, safe working area, work to be carried out in confined space or in hazardous environment, specific outsourcing procedures, specific hazard identification, risk classification and management procedures, and regulatory requirements such as WHS/OHS and electrical safety
 - techniques in the receiving and coordinating the cancellation of access authorities in readiness for restoration
 - methods of conducting audits on correct access authority procedures
 - process of issuing of other access authorities for work permits - working in confined space, if required, coordination of access authorities, and engaging and briefing contractors on electrical and other work
 - issue and receipt of operating agreements
- high voltage (HV) system switching principles, including switching authorisation procedures, encompassing:
 - legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to system switching
 - requirements for the use of manuals, system diagrams/plans and drawings
 - types and characteristics of HV systems and equipment to be switched

- procedures for obtaining correct HV switching authorisation - identification of WHS/OHS hazards, assessing and controlling risks, safety procedures and precautions, and safe approach distances
- responsibilities and protocols, identifying switching resources, procedures for obtaining electrical access permits authorities, requirements for team switching and procedures for coordination of operations
- techniques in HV system switching - pre-switching checks, switching operational procedures, isolation procedures and proving dead de-energised, earthing procedures, switching operational procedures, emergency fault procedures and energisation procedures
- coordinating and directing switching instructions encompassing:
 - legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to switching sheet instructions
 - specific enterprise processes, policies and procedures to be followed
 - processes of consultation, negotiation and coordination - clear and concise instructions and information, methods for the encouragement of feedback and contributions of information and ideas, and responsibilities of members of the team
 - techniques in analysing, planning, coordinating and organising work for a safe outcome and according to statutory requirements and regulations
 - techniques in the effective utilisation of available resources
 - techniques in the coordination and directing of switching schedules instructions
 - relationship between the operating authorities and HV customers, and operating agreements
 - techniques in coordinating and directing HV and low voltage (LV) switching of electrical networks
 - requirements for the use of manuals, system diagrams/plans and drawings - types, characteristics and capabilities of LV and HV electrical equipment to be switched
 - responsibilities of the switching operator
 - techniques in writing switching instructions - sequence of switching operations, isolation procedures, earthing procedures and switching completion notification procedures
 - techniques in gathering, collating and confirming data on switching procedures
- HV overhead and substation switching principles encompassing:
 - legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to HV overhead and substation switching
 - requirements for the use of manuals, system diagrams/plans and drawings - types, characteristics and capabilities of HV electrical equipment to be switched; use, characteristics and capabilities of specialised tools and testing equipment
 - role and responsibilities of the HV switching operator
 - operational forms, access authorities and permits hazard/risk assessments associated with HV switching - types of operational forms, access authorities and permits hazard/risk assessments, purpose and procedure for operational forms, access authorities and hazard/risk assessments
 - use and operation of equipment associated with HV overhead and substation equipment -

test instruments, sticks, interrupters and arc stranglers

- HV switchgear – types, categories, application and operating capabilities
- operation of HV overhead switching or indicating devices - fuses, disconnect fuses, load switching, live line indicators, capacitors, reclosers, sectionalisers, underslung links, air-breaks, switches, disconnects, live line clamps, phasing sticks and phasing tester
- operation of protection systems and substation equipment - fault levels and settings; types and applications; protection systems and substation equipment fault levels and settings; types and applications
- restrictions pertaining to HV switching equipment
- procedures for the isolation of HV mains and working earths - earthing HV electrical apparatus practices and procedures for access authority issuing, and HV switching techniques
- operate switching apparatus - identifying hazards, assessing and controlling risks associated with HV switchgear operation, systematic and defensive techniques, mobile radio procedures and double isolation procedures
- preparation of a HV switching instruction schedule encompassing:
 - legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to switching instruction schedules
 - requirements for the use of manuals, system diagrams/plans and drawings - types, characteristics and capabilities of HV electrical equipment to be switched, points of isolation and earthing locations (safety and working earths), and responsibilities of the switching operator
 - techniques in writing switching instructions - sequence of switching operations, isolation procedures, earthing procedures and switching completion notification 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 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, protection, control, metering, and alarm equipment, computerised electrical plant control and monitoring facilities, and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards,

equipment specifications, regulations, codes of practice, operational event data, network drawings, crisis management procedures and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

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