Australian Government

Assessment Requirements for UETTDRSO47 Coordinate high voltage transmission network

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.

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 coordination of system manipulations that encompass:
  - high voltage (HV) sub-transmission and distribution network
  - HV sub-transmission and distribution network manipulation to control loading on equipment
  - transformers with HV windings (if applicable to enterprise equipment
  - HV busbars
  - HV isolators
  - HV switchgear (applicable to enterprise equipment)
- coordinating a HV transmission network, including all of the following:
  - writing switching instructions
  - checking switching instructions
  - coordinating switching instructions
  - calculating plant loading
  - preparing and authorising HV sub-transmission and distribution switching programs
  - monitoring switching progress
  - monitoring the status of access permits/authorities on HV 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 administrating of supervisory control and data acquisition (SCADA) (if applicable to enterprise equipment)
  - analysing and diagnosing system failures
  - calculating and analysing paralleling conditions on the interconnected HV system

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- allowing safe network access for maintenance activities, including 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:

- HV fault switching principles encompassing:
  - primary causes, effects and types of HV electrical faults
  - HV protection devices - main components, types, categories, applications and functions
  - basic principle of operation of HV system protection devices
  - protection coordination and protection zoning
  - HV feeder auto-reclosing suppression encompassing – function and application
  - circuit condition requirements and switching considerations when paralleling and separating HV feeders
- 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 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

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    - 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
- alternating current (a.c.) transmission system components encompassing:
    - support structures and reasons for selection
    - insulators and reasons for selection
    - conductors and reasons for selection
    - vibration management systems and principles
    - line ratings based on voltage, span, tension and temperature
- a.c. transmission line models encompassing:
    - types of transmission line models based on line length
    - calculation of voltage drop, line regulation and transmission efficiency
    - load sharing between lines
- basic design features and characteristics of transmission structures and associated equipment and/or components encompassing:
    - standards, codes, legislation, supply authority regulations and/or enterprise requirements applicable to installing of poles/structures and associated equipment and or components
    - transmission systems principles – terminologies, primary and secondary, voltage levels and types of lines
    - characteristics of structure - types of structure (towers and poles, concrete and steel), characteristics of types of structures, installation methods and maintenance techniques
    - characteristics of associated equipment used on structures – insulators and earthing (overhead earth and communication lines).

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, computerised electrical plant control and monitoring facilities, and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards,

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

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

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