Australian Government

Department of Education, Employment and Workplace Relations

UETTDRSO33A Manage power systems critical events

Release: 1

UETTDRSO33A Manage power systems critical events

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This Competency Standard Unit covers the management of critical events such as simultaneous multiple network faults, and storm events of various magnitudes. It includes liaison procedures with multiple operating authorities and dispatching and managing multiple field crews. It also encompasses monitoring of safe access to the network and invoking crisis management procedures and mutual aid plans.

Application of the Unit

Application of the Unit **2)**

This Competency Standard Unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit may require a licence/registration to practice in the work place subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly related to Occupational Health and Safety, electricity/telecommunications/gas/water industry safety and compliance, industrial relations, environmental

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License to practice **3)**

protection, anti discrimination and training. Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of operating certain equipment.

Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed plus all the competencies in one (1) of the identified Pathway Unit Group(s):

Common Unit Group

Unit Code	Unit Title
UEENEED104A	Use engineering applications software on personal computers
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components
UEENEEE104A	Solve problems in d.c. Circuits
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications
UEENEEE124A	Compile and produce an energy sector detailed report
UEENEEE125A	Provide engineering solutions for problems in complex multiple path circuits problems

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Prerequisite Unit(s) **4)**

UEENEEE126A	Provide solutions to basic engineering computational problems
UEENEEG101A	Solve problems in electromagnetic devices and related circuits
UEENEEG102A	Solve problems in electromagnetic devices and related circuits
UEENEEG149A	Provide engineering solutions to problems in complex polyphase power circuits
UETTDREL11A	Apply sustainable energy and environmental procedures
UETTDREL16A	Working safely near live electrical apparatus
UETTDRIS62A	Implement and monitor the power system organisational OHS policies, procedures and programs
UETTDRIS63A	Implement and monitor the power system environmental and sustainable energy management policies and procedures
UETTDRSO32A	Manage power systems network faults
UETTDRSO41A	Manage power systems transmission networks
UETTDRSO48A	Respond to discrete and interdependent protection operations
UETTDRSO49A	Coordinate power system operations in a regulated energy market
UETTDRSO50A	Respond to complex power system protection operations
Generation/Distribution and Subtransmission Pathway Unit Group	
UETTDRSO34A	Control power systems generating

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Prerequisite Unit(s) **4)**

	plant
UETTDRSO37A	Develop high voltage distribution and subtransmission switching programs
UETTDRSO40A	Coordinate high voltage distribution and subtransmission networks
Generation/Transmission Pathway Unit Group	
UETTDRSO34A	Control power systems generating plant
UETTDRSO38A	Develop and evaluate power systems transmission switching programs
UETTDRSO47A	Coordinate high voltage transmission network
Distribution and Subtransmission Pathway Unit Group	
UETTDRSO35A	Manage high voltage distribution and subtransmission network demand
UETTDRSO37A	Develop high voltage distribution and subtransmission switching programs
UETTDRSO40A	Coordinate high voltage distribution and subtransmission networks
Transmission Pathway Unit Group	
UETTDRSO38A	Develop and evaluate power systems transmission switching programs
UETTDRSO41A	Manage power systems transmission networks
UETTDRSO42A	Manage power systems transmission network demand
UETTDRSO47A	Coordinate high voltage transmission network

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Literacy and numeracy skills **4.2)**

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 "Literacy and Numeracy"

Reading 5 Writing 5 Numeracy 5

Employability Skills Information

Employability Skills **5)**

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan for the management of a critical event	1.1 OHS practices/procedures and environmental and sustainable energy procedures, which may influence the management of critical events, are reviewed and determined.
	1.2 Purpose of the management is established after data is analysed and expected outcomes of the work are confirmed with the appropriate

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ELEMENT	PERFORMANCE CRITERIA	
		personnel.
	1.3	Organisational established procedures on policies and specifications for the management of events are obtained or established with the appropriate personnel.
	1.4	Identification and testing procedures are discussed with/directed to the appropriate personnel in order to ascertain the occurrence of a critical event.
	1.5	Testing parameters are established from organisational established procedures on policies and specifications.
	1.6	Equipment/tools and personal protective equipment are selected based on specified Performance Criteria and established procedures.
	1.7	Work roles and tasks are allocated according to requirements and individuals' competencies.
	1.8	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.
	1.9	Liaison and communication issues with other/authorised personnel, authorities, clients and land owners are resolved and activities coordinated to carry out work.
	1.10	Risk control measures are identified, prioritised and evaluated against the work schedule.
	1.11	Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures.
	1.12	Action plan is developed.
2 Carry out the management of a critical event	2.1	Action plan is initiated and continually monitored to ensure outcomes are being met.
	2.2	OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimise waste are incorporated

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ELEMENT	PERFORMANCE CRITERIA	
		into the network fault solution in accordance with requirements and/or established procedures.
	2.3	Network fault management decisions are made on the basis of safety and effective outcomes according to requirements and/or established procedures.
	2.4	Stakeholders/customers are kept informed of current status regarding plan progress and recent developments.
	2.5	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.
	2.6	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.
	2.7	Testing of critical event management procedures is undertaken according to requirements and established procedures.
	2.8	Work teams/groups are arranged/coordinated/evaluated to ensure planned goals are met according to established procedures.
	2.9	Solutions to non-routine problems are identified and actioned, using acquired essential knowledge and associated skills, according to requirements.
	2.10	Quality of work is monitored against personal performance agreement and/or established organisational and professional standards.
	2.11	Strategic plans are developed incorporating organisation initiatives as per established procedures.

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ELEMENT	PERFORMANCE CRITERIA
3 Complete the management of a critical event	3.1 Strategic plans are developed incorporating organisation initiatives as per established procedures.
	3.2 Final review of the management procedures of the critical event are undertaken to ensure they comply with all requirements and include all specifications and documentations needed to complete the project.
	3.3 Appropriate personnel are notified of completion and reports and/or completion documents are finalised/commissioned.
	3.4 Reports and/or completion documents are submitted to relevant personnel/organisations for approval and, where applicable, statutory or regulatory approval.
	3.5 Approved copies of critical event management documents are issued and records are updated in accordance with established procedures.

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) Essential Knowledge and Associated Skills (EKAS): This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of managing critical events.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-TSO33A Power systems critical events

Evidence shall show an understanding of power systems critical events to an extent indicated by the following aspects:

T1 Enterprise specific procedures and work practices relating to critical events encompassing:

- Commonwealth, State/Territory and local government legislation, supply authority regulations Standards, codes, and or enterprise requirements applicable to the procedures and work practices relating to critical events
- Requirements for the use of operational manuals, system diagrams/plans and drawings
- Identify and interpret enterprise operating procedures
- Techniques in the applying enterprise operating procedures.

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the Range Statement of the competency standard unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this Competency Standard Unit and shall be used in conjunction with all component parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment **9.1)**

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for

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apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each Element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines – UET12". Evidence shall also comprise:

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:

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- Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range; and
- Apply sustainable energy principles and practices as specified in the Performance Criteria and range; and
- Demonstrate an understanding of the essential knowledge and associated skills described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment; and
- Demonstrate an appropriate level of employability skills; and

- Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures; and
  - Demonstrated performance across a representative range of contexts from the prescribed items below:

Range of tools/equipment/materials/procedures/workplaces/other variables		
Group No	**The minimum number of items on which skill is to be demonstrated**	**Item List**
A	Manage a Critical Event within including all of the following:	Identify a critical event. Develop a plan to enable management of a critical event. Implement plans in order that the network be restored after the critical event has occurred. Effectively liaise with operating authorities and field crews to restore the network after a critical event has occurred. Document/De-brief actions upon

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		restoration of the network.
B	At least one occasion	Dealing with an unplanned event by drawing on essential knowledge and associated skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

Context of and specific resources for assessment **9.3)**

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual for management of a critical event.

Note:

Access will be needed to: relevant protection, control, metering, and alarm equipment, network drawings, computerised electrical plant control and monitoring facilities, operational event data, enterprise operational policies, procedures and work practices and enterprise crisis management procedures.

In addition to the resources listed above, in Context of and specific resources for assessment, evidence should show demonstrated competency working in realistic environment and a variety of conditions

Method of assessment **9.4)**

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 "Assessment Guidelines".

Note:
Competent performance with inherent safe working practices is expected in the Transmission, Distribution and Rail Traction

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Industry. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and associated skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

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Range Statement

RANGE STATEMENT

10) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

This Competency Standard Unit shall be demonstrated in relation to the management of critical event operations such as simultaneous multiple network faults and storm events of various magnitudes and shall be demonstrated using the following:

Equipment includes; sectionalisers, security, sensitive earth fault protection, communication bearers, local trip circuits, inter-trip circuits, remote control supervisory circuits, frequency injection units, under frequency circuits, voice frequency protection signalling, micro-controllers, RDC and MUX units, pilot cables, telephone lines, microwave bearers, cossonay earthwire carriers and optical fibre cables.

Equipment also includes; LV fuses, links and bridges, HV links, fuses, reclosers, ring main units, circuit breakers, isolators, earth switches, sectionalisers, air break switches, capacitor banks, transformer taps, metering and protection equipment, data communication systems. Primary and secondary voltage and current injection equipment; time delay measuring equipment; current transformers; voltage transformers; power transformers; tapchangers; circuit breakers; capacitor banks; ring main units; audio frequency load control; circuit breaker auxiliary systems; substation and metal structure earthing systems; SCADA interfaces and transducer inputs; local opto-isolated alarms: PLC programs; auto reclosers (ACRS); protection relays; metering; control circuits; statistical metering systems; frame leakage relays; distance relays; pilot wire relays; transformer differential relays; busbar differential relays; impedance bus zone relays; overcurrent and earth fault relays; transformer neutral check relays; circuit breaker fail relays; multi-trip relays; auto recloser relays; voltage transformer failure relays; surge protection relays; buchholz relays; winding temperature relays; sensitive earth fault relays; phase failure relays; frequency relays; load shedding relays; general protection LV devices; oil temperature protection devices; oil surge protection devices; power supplies. differential relays; power systems; multi-facetted schemes; interactive overload schemes, distance protection (incorporating relay selection, switched/non-switched schemes; mutual coupling and teed feeder systems); protection signalling (incorporating series, direct, permissive, distance acceleration, block interruption); telecommunication circuits and equipment; alternators; generator differential protection; over/under speed protection; over/under flux protection; synchroscopes; excitation circuits; governors.

Communication equipment may include: Fixed radio; mobile radio; satellite; sacs controllers; computer hardware and software; programmable controllers; modems; digital line drivers (low and high speed); fibre optic line drivers (low and high speed); radio links including voice link and digital bearer; wave trap.

The following constants and variables included in the Element/Performance Criteria in this unit are fully described in the Definitions Section 1 of this volume and form an integral part of the Range Statement of this unit:

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RANGE STATEMENT

- Appropriate and relevant persons (see Personnel)
- Appropriate authorities
- Appropriate work platform
- Assessing risk
- Assessment
- Authorisation
- Confined space
- Diagnostic, testing and restoration
- Documenting detail work events, record keeping and or storage of information
- Drawings and specifications
- Emergency
- Environmental and sustainable energy procedures
- Environmental legislation
- Environmental management documentation
- Established procedures
- Fall prevention
- Hazards
- Identifying hazards
- Inspect
- Legislation
- MSDS
- Notification.
- OHS practices
- OHS issues
- Permits and/or permits to work
- Personnel
- Quality assurance systems
- Requirements
- Testing procedures
- Work clearance systems

Unit Sector(s)

Not applicable.

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Competency Field

Competency Field **11)**

System Operation Units

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