



Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN3063A Locate, identify and rectify recurrent network faults

Release: 1

ICTTEN3063A Locate, identify and rectify recurrent network faults

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to locate, identify and rectify recurrent faults in a telecommunications network. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.
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Application of the Unit

Application of the unit	Cablers, installers and technicians who install and maintain a broad range of telecommunications networks including fault investigations, apply the skills and knowledge in this unit.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for fault-finding activity	1.1. Prepare for given work according to occupational health and safety (OHS) <i>and environmental requirements</i> 1.2. Arrange access to the site according to required procedure 1.3. Locate existing and potential site hazards 1.4. Contact the customer to verify nature of the recurrent fault and the network type
2. Conduct activities for recurrent network fault-finding	2.1. Analyse fault history using fault records to establish nature of fault 2.2. Select test equipment and conduct the appropriate test to identify potential faults ensuring the diagnostic process does not compromise the integrity of the network element or system 2.3. Evaluate test results to determine relevant symptoms of the recurrent fault using appropriate methods and appropriate process 2.4. Locate the probable cause, type and location of the fault 2.5. Rectify the fault or escalate to appropriate level
3. Report fault-findings and solutions	3.1. Prepare customer report on the diagnostic procedure, fault identification and fault clearance 3.2. Update fault records database 3.3. Restore worksite to the customer's satisfaction 3.4. Notify the customer and obtain sign off

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to question and respond to subject matter experts on technical and operational matters related to performance of telecommunications networks and fault-finding
- literacy skills to interpret technical documentation and incorporate technical

REQUIRED SKILLS AND KNOWLEDGE

- language into written tasks and basic reports
- numeracy skills to interpret technical data for specifications of telecommunications networks
 - planning and organisational skills to:
 - coordinate the fault-finding process in liaison with others
 - plan, prioritise and monitor own work
 - problem solving skills to apply network fault-finding techniques in a telecommunications network
 - research skills to interrogate databases and other sources to investigate systematic and logical fault-finding techniques of telecommunication networks
 - safety awareness skills to:
 - apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
 - select and use required personal protective equipment conforming to industry and OHS standards
 - work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
 - technical skills to select and use appropriate test equipment to undertake fault-finding techniques in telecommunications networks

Required knowledge

- application of Ohm's law, impedance and reactance formulas to solve AC electrical problems
- behaviour of faulty network elements, including symptoms and impact on network
- interpretation of test results and network element/system specifications
- operation and purpose of testing equipment
- operation of transformers
- overview of telecommunications networks
- performance testing and fault finding techniques of telecommunications networks
- systematic and logical fault finding
- types of power sources used in telecommunications networks

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- test telecommunications networks to identify faults
- identify and rectify recurrent faults
- conduct and report on a fault-finding task in a telecommunications network for a range of faults
- use systematic and logical fault-finding techniques in telecommunications networks and field testing procedures to particular workplace situations
- comply with all related OHS requirements and work practices.

Context of and specific resources for assessment

Assessment must ensure:

- sites on which network testing and fault-finding may be conducted
- use of line transmission, optical and radio measurement equipment currently used in industry
- system documentation, and other site-related documentation necessary to conduct tests and fault-finding investigations.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct observation of the candidate undertaking network tests and fault-finding techniques
- review of the candidate's evaluation of network testing and fault diagnosis
- oral or written questioning to assess knowledge of performance of telecommunications networks.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- ICTTEN3056A Install telecommunications network equipment.

EVIDENCE GUIDE

	Aboriginal people and other people from a non-English speaking background may have second language issues. Access must be provided to appropriate learning and assessment support when required. Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed. In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. Where applicable, physical resources should include equipment modified for people with special needs.
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Range Statement**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

OHS and environmental requirements may relate to:

- need to decommission and isolate worksite and lines prior to commencement
- need to identify other services, including power and gas
- personal protective clothing:
 - earmuffs
 - gloves:
 - leather

RANGE STATEMENT	
	• plastic • rubber • head protection • kneepads • masks • protective suits • safety boots • safety glasses for laser work • safe working practices, such as the safe use and handling of: • asbestos • chemicals • materials • tools and equipment • work platforms • safety equipment: • flashing lights • gas and other hazard detection equipment • safety barriers • trench guards • warning signs and tapes • witches hats • special access requirements • suitable light and ventilation • environmental considerations: • clean-up protection • noise, dust and clean-up management • stormwater protection • waste disposal containers: • drop sheets • sharps containers • waste management.
Hazards may include:	• earth potential rise (EPR): • optical fibre cable: • bare fibres • hazardous laser light • radio frequency (RF) equipment emitting radiation

RANGE STATEMENT	
	remote power feeding services which operate at above telecommunications network voltage (TNV).
Recurrent fault may relate to:	- call drop out - distortion - heat, vibration - intermittent fault or interference - noise - occurrences at set periodic times - periodic loss of performance.
Network type may include:	- cable - customer access network (CAN) - customer premises equipment (CPE) - data - hybrid fibre coaxial (HFC) - optical - radio.
Fault records may include:	- customer complaint database - fault records database - previous repairs - repair technician reports.
Test equipment may include:	- bit error rate tester (BERT) - cathode ray oscilloscope (CRO) - local area network (LAN) Cat tester - multimeters - transmission level measuring set.
Appropriate test may include:	- bit error rate (BER) - crosstalk - impedance - loopback - power level - return loss - wire maps.
Integrity may include:	- downgraded performance - interference - loss of connection.
Relevant symptoms may include:	- emission of: - heat - noise

RANGE STATEMENT	
	• odours • errors • low output levels or poor coverage • loss of functionality of equipment: • distortion • intermittent operation • loss of timings • noise • physical damage to equipment.
Appropriate methods may include:	• direct observation • interrogation of network performance data • measurement • questioning.
Appropriate process may include:	• analysis of symptoms • fault isolation • observation and measurements • use of manufacturer's diagnostic data.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Telecommunications networks engineering
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