



Australian Government

ICTCBL332 Locate, identify and rectify copper cable faults

Release: 1

ICTCBL332 Locate, identify and rectify copper cable faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to use systematic and logical fault-finding techniques according to all safety requirements and work practices commonly used in fault remediation.

It applies to copper cable jointers who install and maintain telecommunications cable networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for fault- finding activity	1.1 Determine, from documentation or discussion with appropriate personnel, work to be undertaken, including reported fault location 1.2 Access site according to workplace and/or enterprise procedures 1.3 Identify existing and potential site hazards, assess risks and implement risk control measures 1.4 Prepare testing in consultation with others affected by the proposed work and sequence work appropriately 1.5 Obtain required materials for testing, reporting and rectification work according to enterprise procedures and job/work ticket requirements 1.6 Obtain required tools, equipment and testing devices according

ELEMENT	PERFORMANCE CRITERIA
	to enterprise procedures and check for correct operation and safety
2. Conduct activities to test and locate cable faults	2.1 Establish nature of fault through analysis of source, history and available information 2.2 Select and use appropriate test equipment to locate, diagnose and analyse fault 2.3 Conduct tests according to selected test equipment operating instructions and safety requirements, and ensure diagnostic process aligns to customer service requirements 2.4 Identify and test for fault efficiently and sustainably 2.5 Evaluate test results to determine cause of fault/s using appropriate methods and processes
3. Rectify fault	3.1 Carry out work health and safety (WHS) activities prior to entering a pit or manhole and protect underground assets prior to excavation 3.2 Physically locate fault position in a length of cable or buried joint 3.3 Rectify fault or escalate to appropriate level 3.4 Discuss and document established methods for dealing with unexpected situations with appropriate personnel 3.5 Confirm that current standard of performance for copper cables will be viable after fault remediation work 3.6 Confirm integrity of repaired fault using appropriate carrier testing processes
4. Report fault-findings and rectification	4.1 Report fault identification and fault clearance 4.2 Update fault records 4.3 Restore worksite to customer satisfaction and acceptable industry standards 4.4 Notify customer and/or relevant parties to obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
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Skill	Description
Reading	Recognises and interprets technical documentation to determine important information
Writing	Uses clear, specific and industry-related terminology to develop basic reports and in all written tasks
Oral Communication	- Liaises with customers about technical requirements using specific and relevant language - Uses listening and questioning techniques to confirm understanding
Numeracy	Evaluates and reviews technical data for specifications
Navigate the world of work	- Appreciates implications of legal and regulatory responsibilities related to own role - Seeks advice about expectations when preparing for work
Get the work done	- Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks - Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues - Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account - Diagnoses and implements standard solutions to for routine problems, seeking assistance from more experienced colleagues when required - Understands purposes and specific functions of common fault location equipment and uses them effectively to complete routine tasks

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTCBL332 Locate, identify and rectify copper cable faults

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Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- discuss faults with customers and appropriate personnel
- identify a minimum of three different types of faults when testing telecommunications cables
- analyse test results and identify and rectify a minimum of three different types of faults
- use systematic, logical and appropriate fault-finding techniques for field-testing situations
- comply with all related work health and safety (WHS) requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- WHS and environmental requirements
- basic communications testing and measuring devices and techniques including:
 - types and applications of testing/measuring devices including voltage testers, multimeters, copper time domain reflectometers (TDRs), bridge meggers, continuity testers and insulation resistance testers
 - features of testing/measuring devices including user calibration, parameter and range settings
 - safety procedures
 - circuit arrangement of test/measuring devices
 - readings
 - storage, maintenance and care of test/measuring devices

- Australian Standard quality assurance requirements for test equipment calibration certification
- carrier copper network, architecture and cable layout including:
 - seven different types of fault conditions that may affect a customer service in terms of how information is carried
 - continuity of a circuit to facilitate a customer service
 - types of network components and terminal points such as cabinets, pillars, main distribution frames, internal distribution frames, pits, manholes and joints
 - different types of joints (inline, single-ended, pressurised and unpressurised)
- performance parameters associated with copper cables including:
 - electrical circuit characteristics of voltage, current and resistance/impedance
 - open circuit, short circuit and pair continuity
 - split legs, reversed legs, contacts, earths and foreign battery
 - attenuation
 - insulation resistance (leakage)
 - loop resistance
 - characteristic impedance
- how to evaluate test results for compliance with carrier requirements for copper cables including:
 - tests required to evaluate a given performance parameter
 - test equipment and leads needed to evaluate a given performance parameter
 - operation of test equipment for correct evaluation of specific cable performance parameters and to obtain accurate and reliable results
 - transmission performance requirements
- behaviour of faulty cable network elements, including symptoms and impact on cable network
- systematic and logical fault-finding
- interpretation of test results and cable network element/system specifications
- possible fault positions in a length of cable or buried joint including:
 - joint in a pit
 - manhole
 - buried.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s on which copper cable network testing and fault-finding can be conducted
- line transmission and measurement equipment currently used in industry

- system documentation and other site-related documentation required to conduct tests and fault-finding investigations for a minimum of three different types of faults.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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