Title	**Apply fundamental techniques for identifying and locating faults in electrical fittings or systems**		
Level	**3**	**Credits**	**4**

Purpose	This unit standard covers the basics of logical and systematic fault finding techniques for electrical fittings or systems. People credited with this unit standard are able to: – describe fundamental techniques to identify the location and cause of faults in electrical fittings or systems; and – apply five fundamental techniques to identify the location and cause of faults in electrical fittings or systems.

Classification	Electrical Engineering > Core Electrical

Available grade	Achieved

Guidance Information

1 This unit standard has been developed for learning and assessment on-job or off-job with realistic simulations.

2 This unit standard and unit standards 15848, 29420, 29421, 29422, 29443, 29444, 29481, and 29483 meet the assessment requirements of ERAC CEPC 54.

3 Definitions
CEPC – Critical Essential Performance Capability.
Electrotechnology products or systems – may include but are not limited to – for example, a computer system, programmable logic controller system (PLC) for a single process, or professional radio receiver; or heavy electrical products, for example, factory generation system, components for national grid, industrial electric motor and controller, or equivalent.
EPC – Essential Performance Capability.
ERAC – Electrical Regulatory Authorities Council.
EWRB – Electrical Workers Registration Board.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.
Safe and sound practice – as it relates to the installation of electrical equipment is defined in AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules).*

4 Range

a Faults may be at the level of electronic components, printed circuit boards, cards, wiring, electromechanical components, electromagnetic components, or other units or elements within larger systems such as dwellings, offices, factories, electricity supply facilities, or telecommunications systems.

b The emphasis is on diagnosis using logical analysis of symptoms, observation, and measurement, rather than by trial and error.

c Electrical, radiation, and workshop or laboratory safety practices are to be observed at all times.

d All measurements are to be expressed in Système Internationale (SI) units and multipliers.

e Candidates may refer to current legislation and Standards during assessment.

f Demonstration of safe working practices and installation in accordance with *safe and sound practice* are essential components of assessment of this unit standard.

g All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with:

i legislation;

ii policies and procedures;

iii ethical codes;

iv Standards – may include but are not limited to those listed in Schedule 2 of the Electricity (Safety) Regulations 2010;

v applicable site, enterprise, and industry practice; and,

vi where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and performance criteria

Outcome 1

Describe fundamental techniques to identify the location and cause of faults in electrical fittings or systems.

Performance criteria

1.1 Describe three techniques to diagnose faults in electrical fittings or systems.

Range techniques may include but are not limited to – observation, simulation, measurement, identification of function loss, comparison, previous fault data including frequency of occurrence, manufacturers' documentation and diagnostic data, built-in diagnostics.

Outcome 2

Apply three fundamental techniques to identify the location and cause of faults in electrical fittings or systems.

Range evidence of different faults on different electrical fittings or systems is required.

Performance criteria

2.1 With the aid of manufacturers' diagnostic data and without compromising the integrity of the products or systems, locate faults and identify the causes through logical analysis of symptoms, observation, simulation, and measurement.

2.2 Explain the logic of the diagnostic technique used to find each fault.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 July 2016	31 December 2027
Review	2	25 May 2023	31 December 2027

Consent and Moderation Requirements (CMR) reference	0003

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.