

Title	Attend to breakdowns in explosive atmospheres		
Level	4	Credits	7

Purpose	<p>This unit standard is intended for electricians, technicians, or engineers who are responsible for attending to breakdowns in explosive atmospheres, or of explosion-protected and associated apparatus.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – prepare to attend breakdown – evaluate extent of work – arrange repair work, and – confirm completion of work.
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Classification	Explosive Atmospheres > Electrical Apparatus in Explosive Atmospheres - Operations
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been designed for training and assessment on-job or off-job in a simulated environment which includes explosion-protected apparatus and wiring systems similar to those encountered in a real workplace. It is recommended candidates achieve Unit 26740, *Demonstrate and apply intermediate underpinning knowledge of electrical equipment in explosive atmospheres*, or demonstrate equivalent knowledge and skills, prior to enrolment in this unit standard.
- 2 This unit standard is intended to be assessed against in conjunction with other work skills related to attending to breakdowns in general electrical, instrumentation, or mechanical plant, or apparatus service and maintenance at NZQF Level 4 or above.
- 3 Competence is to be demonstrated in relation to any classified hazardous areas and explosion-protection techniques. Where competency is demonstrated on wiring or cabling and apparatus that operate at extra low voltage and low voltage, registration with the Electrical Workers Registration Board is required. For work on wiring and apparatus operating above 1000 V AC or 1500 V DC, competency in high voltage work must be held. A copy of a candidate's current practicing license must be presented at time of assessment.

4 References

- AS/NZS 1768:2007, *Lightning protection*
- AS/NZS 3000 (version as cited in the Electricity (Safety) Regulations), *Electrical installations (known as the Australian/New Zealand Wiring Rules)*
- AS/NZS 4761.1 (version as cited in the Electricity (Safety) Regulations), *Competencies for working with electrical equipment for hazardous areas (EEHA) – Competency Standards*
- AS/NZS IEC 60079.10.1:2022, *Explosive atmospheres, Part 10.1: Classification of areas – Explosive gas atmospheres*
- AS/NZS 60079.14 (version as cited in the Electricity (Safety) Regulations), *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*
- AS/NZS 60079.17 (version as cited in the Electricity (Safety) Regulations), *Explosive atmospheres – Part 17: Electrical installations inspection and maintenance*
- AS/NZS 60079.29.2 (version as cited in the Electricity (Safety) Regulations), *Explosive atmospheres – Gas detectors – Selection, installation, use and maintenance of detectors for flammable gases and oxygen*
- Electricity (Safety) Regulations 2010
- Health and Safety at Work Act 2015, and associated regulations
- *Workplace Exposure Standards and Biological Exposure Indices Edition 13*, available from WorkSafe New Zealand www.worksafe.govt.nz, and associated regulations

and all subsequent amendments and replacements.

5 Definitions

Appropriate personnel – individuals with responsibilities for co-ordination, design, installation, maintenance, production, or servicing activities. This can include: site managers, project managers, engineers and technicians, technical experts, line managers or supervisors, regulatory personnel, team leaders, other personnel designated by an organisation or enterprise.

Certification documentation – document(s) that assure(s) the conformity of a product, process, system, person, or organisation with specified requirements.

Established procedures – formal documented arrangements of an organisation, enterprise or statutory authority in regard to how work is to be done and by whom and may include but are not limited to – quality management systems, safety management systems, work clearance systems, work instructions, reporting systems, and arrangements for dealing with emergencies.

Explosion-protection techniques – techniques applied to the design of electrical apparatus, components and systems to prevent the electrical energy from becoming an ignition source in the presence of flammable vapours and gases or combustible dusts in explosive atmospheres. See *Explosion-protected apparatus*.

Explosion-protected apparatus – electrical apparatus to which specific measures are applied to avoid ignition of a surrounding explosive atmosphere.

Explosive atmosphere – an atmosphere comprising volatile substances mixed with air under atmospheric conditions in the form of gases, vapours, mist, or dust, in which, after ignition has occurred, combustion spreads to the entire unburned mixture.

Verification dossier – a set of documents showing the complete compliance history of electrical apparatus and installations within hazardous areas, as defined in Standards.

Wiring system – permitted wiring and accessories for power, measurement, control or communications purposes.

6 Range

- a Assessment is to take account of variations between the industry sectors and enterprises. For example, apparatus used in dust-explosive atmospheres will be different in some respects from that used in a petrochemical plant.
- b Health and safety policies and procedures may include but are not limited to – work permits and clearances, hazard monitoring, evacuation procedures, plant and electrical isolation.
- c Established maintenance procedures must be followed.
- d All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with safe working principles and practices, legislation, workplace policies and procedures, and Standards, safe and sound practice, and industry practice; and, where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and performance criteria

Outcome 1

Prepare to attend breakdown.

Performance criteria

- 1.1 Confirm the nature of the breakdown with appropriate personnel to establish the need to enter the explosive atmosphere's area.
- 1.2 Review maintenance records of apparatus related to the reported breakdown for possible causes and evaluate the extent of the breakdown.
- 1.3 Obtain and check testing devices and tools, anticipated as being needed for the work, for correct operation and safety.
- 1.4 Determine it is safe to enter the explosive atmospheres area in accordance with established procedures and obtain relevant clearance to work.

Range may include but is not limited to – erection of signage at access points to work area.

Outcome 2

Evaluate extent of work.

Performance criteria

- 2.1 Confirm the extent of breakdown with appropriate personnel.
- 2.2 Ascertain other personnel required to determine cause and rectify breakdown from available evidence and arrange their attendance where applicable.

- 2.3 Ascertain the extent of repair work from available evidence and confirm with appropriate personnel.
- 2.4 Establish the limits of repair work that can be carried out in situ with regard to explosion risk and in accordance with established procedures and requirements.

Outcome 3

Arrange repair work.

Performance criteria

- 3.1 Isolate apparatus in accordance with established procedures.
- 3.2 Circuits of apparatus being withdrawn from service are terminated or isolated safely by appropriately qualified personnel and in a manner approved for the classification of the area.
- 3.3 Sight certification documentation for replacement apparatus to ensure that it is identical to the apparatus it replaces and is in accordance with the explosion-protection system design.
- 3.4 Carry out repair work in situ in accordance with established procedures and requirements.

Outcome 4

Confirm completion of work.

Performance criteria

- 4.1 Explosion-protected apparatus and systems are inspected and tested by appropriately qualified personnel after repairs are completed to ensure the integrity of the system.
- 4.2 Notify appropriate personnel of the completion of the repair work and complete documentation in the verification dossier in accordance with established procedures and requirements.

Range completion of repair work may include but is not limited to – removal of signage at access points to work area.

Planned review date	31 December 2027
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	29 August 2000	28 February 2023
Review	2	20 May 2011	31 December 2025
Review	3	2 March 2023	N/A

Consent and Moderation Requirements (CMR) reference

0003

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

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council qualifications@WaihangaAraRau.nz if you wish to suggest changes to the content of this unit standard.