Course in

Conduct In-service Safety Inspection and Testing of Electrical Equipment (other than fixed wired equipment)

Course Code – 30239QLD

CLASSIFICATION

Category:
AQF Level:
Stream:
ASCO:
Field of Study:

ACCREDITATION
COPY

Training Product – Conduct In-service Safety Inspection and Testing of Electrical Equipment (other than fixed wired equipment)

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PART A

1. PROPONENT

Department of Industrial Relations

2. ADDRESS

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3. CONTACT DETAILS FOR PROPONENT

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4. TYPE OF SUBMISSION

Accreditation

5. COPYRIGHT INFORMATION

6. ACCREDITATION AUTHORITY

Department of Employment and Training

7. AVETMISS INFORMATION

Stream

ASCO:

Field of Study:

Course Code: 30239QLD

PART B

1. COURSE DETAILS

1.1 TRAINING PRODUCT NAME

Course Code

30239QLD

Course Name

Course in Conduct In-service Safety Inspection and Testing of Electrical Equipment

1.2 NOMINAL DURATION

The nominal hours for the course will be set at 8 hours.

2. TRAINING PRODUCT DEVELOPMENT

2.1 INDUSTRY/MARKET NEEDS

A need has been identified in the electricity sector to produce a training product to be used in the training of persons inspecting in-service electrical equipment. Currently, the *Electrical Safety Regulation 2002* requires that a competent person perform this work. This course will provide the ability to acquire the necessary skills of a competent person.

Graduates from this training will form the basis of a pool of skilled people that are required to perform testing procedures as outlined in the relevant Queensland Legislation and Australian standards.

The Queensland Utilities and Services Industry Training Advisory Board with the support of the Electrical Safety Office and the Division of Workplace Health and Safety, assembled an expert electrical industry panel to define a competent person and then develop a training program suitable for delivery on an industry wide basis. The Division of Workplace Health and Safety has funded the process.

This evaluation considered training needs that support the requirements of AS/NZS 3760 – In-service safety inspection and testing of electrical equipment. These findings have been reported to the *Department of Industrial Relations (Division of Workplace Health and Safety).* Essentially, this unit of competency will provide graduates with the skills to be identified as a competent person for the testing and tagging of electrical equipment as per the requirements of Standard AS/NZS 3760 and the *Electrical Safety Regulation 2002.*

The industry group (Training Product Advisory Committee) brought together for the process of developing this Training Product included representation from

Government, Employer Representatives and Unions. The industry group included a subsequent cross industry panel made up of representatives from the following:

- Queensland Utilities Services Industry Training Advisory Board
- Department of Industrial Relations, Division of Workplace Health and Safety
- Department of Employment and Training
- Department of Industrial Relations, Electrical Safety Office
- National Electrical and Communications Association, Queensland
- Ergon Energy
- Communications, Electrical and Plumbing Union
- TAFE Queensland

3. TRAINING PRODUCT OUTCOMES

3.1 TRAINING PRODUCT OUTCOMES

The outcome of this course will be to train students in the requirements of Standard AS/NZS 3760 – In-service safety inspection and testing of electrical equipment. This training will give learners the skills required of a competent person in accordance with the *Electrical Safety Regulation 2002*. These skills will allow the trainers to successfully carry out these duties in accordance with recommended procedures endorsed by the Division of Workplace Health and Safety and the Electrical Safety Office.

3.2.1 NATIONALLY ENDORSED COMPETENCY STANDARDS/COMPETENCIES

The Electrotechnology National Training Package does not have an appropriate unit of competency in relation to the inspection and testing of in-service electrical equipment. It is envisaged that this unit, or a unit closely related, will be included in the Electrotechnology National Training Package in due course.

3.2.2 ALTERNATIVE STANDARDS

Unit Code	Unit Title
QES001	Conduct In-service Safety Inspection and Testing of Electrical Equipment (other than fixed wired equipment)

3.3 GENERAL COMPETENCIES

The Mayer key competencies have been addressed for this Training product and a table addressing these General Competencies can be found in the unit of competency QES001 within this Training Product document.

3.4 RECOGNITION GIVEN TO THE TRAINING PRODUCT

This Training Product has been endorsed by the Department of Industrial Relations.

3.5 LICENSING/REGULATORY REQUIREMENTS

Through consultation with stakeholders in the electricity industry, it has been identified that the course in Conduct In-service Inspection and Testing of Electrical (other than fixed wired equipment) satisfies the requirement of the *Electrical Safety Regulation 2002* for a competent person to inspect and test and tag electrical equipment.

4. TRAINING PRODUCT STRUCTURE/RULES

4.1 OUTLINE OF TRAINING PRODUCT STRUCTURE/RULES

The course is completed upon completion of the unit of competency as listed in this document.

4.2 REQUIREMENT TO RECEIVE THE QUALIFICATION

Successful completion of the unit of competency as per this Training Product. The award granted shall be a statement of attainment.

4.3 EXIT POINTS

There is only one exit point for this Training Product. The unit of competency identified must be completed and a statement of attainment will be issued on its completion. Recognition for any previous learning (if a student re-enters the training at a later date), is to be determined by the Registered Training Organisation.

4.4 ON THE JOB TRAINING

This Training Product will be delivered off the job with either on the job as actual or simulated assessment.

4.5 CUSTOMISATION

Customisation of the course must be in accordance with the *National Training Quality Council (NTQC) Guidelines for the Customisation of Accredited Courses.*

Registered Training Organisations should also contextualise units of competency by structuring learning processes and assessment tools so that they are relevant to the particular client group (eg products, terminology, work practices) where this does not contradict the course rules and customisation guidelines;

- Adding underpinning knowledge and performance criteria to identify unique aspects that apply to an industry sector, enterprise, community or particular client

group (eg products, terminology, work practices) where this does not contradict the course rules and customisation guidelines;

- Using enterprise-specific equipment, facilities or learning resources;
- Using contexts that relate to the industry sector/enterprise/community; and
- Reasonable adjustment of the assessment strategy and tools to better suit the needs of particular clients or client groups (eg clients with special needs) or to suit the needs of an industry sector/enterprise/community.

In delivering this accredited course, Registered Training Organisations are also able to use a range of delivery modes and flexibility in their approach (eg by integrating the delivery and assessment of several units of competency) to improve the flexibility of course delivery and/or better meet client needs, provided this is consistent with the course rules and the customisation guidelines.

Further, any customisation must consider the *Electrical Safety Regulation 2002*, the Australian/New Zealand Standard AS/NZS 3670-In-service Safety Inspection and Testing of Electrical Equipment, in conjunction with the proponent.

4.6 ENTRY REQUIREMENTS

Entry into this Training Product will be limited to those employed or intending to be employed to carry out testing and tagging procedures on a routine basis so that currency of competency is maintained.

4.7 RECOGNITION OF PRIOR LEARNING

Recognition of prior learning policies and practices of Registered Training Organisations delivering this course must conform to the requirements of Standard 8.2 of the Australian Quality Training Framework (AQTF) *Standards for Registered Training Organisation.* Learners who have completed appropriate training, or who, through prior learning and experience have gained the required skill/competency stipulated for the course may be granted credit upon substantiation of that claim, through an RPL or recognition of current competency (RCC) process.

5. ASSESSMENT

5.1 ASSESSMENT STRATEGY/GUIDELINES

Assessment is the gathering of evidence of competent performance. The assessment must be used to verify underpinning knowledge and skills and competence in the units of competency. The assessment strategy must be valid, reliable, flexible, fair and consistent. Assessment should be done in a holistic, integrated manner. If not conducted on the job, then situations to realistically simulate the working environment should be used.

All assessments must be conducted in accordance with Standard 8 ("Learning and assessment strategies") and 9 ("RTO assessments") of the Australian Quality Training Framework (AQTF) *Standards for Registered Training Organisations* **and** within the parameters of units BSZ401A (plan assessment), BSZ402A (conduct assessment) and BSZ403A (review assessment) from the *Training Package for Assessment and Workplace Training* (BSZ98) – negotiating the assessment with the candidate, advising on appeal mechanisms and the like.

Recording Results

Competency based assessment requires one of the following results to be recorded for the student:

- competency achieved; OR
- competency not yet achieved.

Re-Testing

Assessment of the Training Product calls up the integration of the 3 elements and associated Performance Criteria and the underpinning knowledge and skills. If a learner is found to be not yet competent, reassessment of the unit will need to occur. In this process, the reassessment will occur within the elements and associated performance criteria and underpinning knowledge found to be not yet competent. A reassessment of the complete unit will therefore not be necessary.

6.0 DELIVERY OF THE TRAINING PRODUCT

6.1 DELIVERY MODES

Delivery of this training product can involve various forms of delivery including face to face delivery, flexible delivery and or mixed modes of delivery.

6.2 RESOURCES

6.2.1 HUMAN RESOURCES

All Registered Training Organisations delivering the course must ensure that trainers and assessors meet (or exceed) the requirements of Standard 7 ("the competence of RTO staff") within the Australian Quality Training Framework *Standards for Registered Training Organisations.*

The Course Development Advisory Committee has provided the following guidance on the vocational competency for trainers and assessors of this course:

- Staff responsible for the presentation and assessment of learning are required to meet minimum resources requirements as stated below, however, providers are encouraged to implement higher standards where possible;
- They possess evidence of skills and knowledge relevant to the unit of competency at a level equivalent or higher than that being presented.

To be recognised as having the required skills and knowledge, a prospective instructor is required to:

- Provide evidence of having successfully completed a recognised and relevant course of study/qualification which is specifically related to this Training Product; OR;
- Provide formal evidence of successfully completing the requirements of an established process for Recognition of Prior Learning (RPL) which is specifically related to the issuance of this qualification.

- Possess a level of varied and relevant skills application such as would be attained in a minimum of (2) years of industry experience and which is consistent with the course being taught and certified by a Registered Training Organisation.
- Possess competencies and knowledge in relation to the development, presentation, assessment and evaluation of the course as evidenced by:

    - A minimum equivalent qualification for Certificate IV in Assessment and Workplace Training or equivalent currency of competencies and knowledge relevant to the areas of instruction being presented.

6.2.2 PHYSICAL RESOURCES

All Registered Training Organisations delivering the course must have access to the facilities, equipment, training and assessment materials required to provide the training and/or assessment services within its scope of registration and scale of operations, to accommodate client numbers, client needs, delivery methods and assessment requirements (including off-campus and on-line delivery), in accordance with the requirements of Standard 9.4 within the Australian Quality Training Framework *Standards for Registered Training Organisations.*

Physical resource requirements for the unit of competency outlined in this submission include the tools, plant, equipment, materials and facilities and appropriately identified workplace or simulated workplace projects of work and current reference materials and Australian standards.

7. ARTICULATION AND CREDIT TRANSFER

7.1 ARTICULATION/CREDIT TRANSFER DETAILS

This unit of competency currently does not exist in the Electrotechnology National Training Package. It is however envisaged that this unit or a unit very similar will be included into the Electrotechnology National Training Package in due course. In this event, transfer of credit will articulate into the appropriate National Training Package unit of competency, provided they are deemed to be of a consistent scope.

7.2 TRAINING/EDUCATION/CAREER PATHWAYS

Upon completion of this course the learner will receive a recognised statement of attainment, to carry out functions to test and tag in-service electrical equipment. This meets the requirements of a competent person as specified by *the Electrical Safety Regulation 2002.*

8. ON-GOING MONITORING AND EVALUATION

On-going review of the course will focus on:

- Relevance of existing content in relation to introduction of new legislation, changes in technology and work practices and any industry/ITAB reviews.
- Effectiveness of delivery and assessment.
- Client satisfaction (both graduate and employer).

The course will also undergo a review within one year of any endorsement of associated units in the National Electrotechnology Training Package.

9. SOCIAL JUSTICE

Principles of social justice must be appropriately addressed in all aspects of the course implementation and assessment, to comply with Standard 6 ("access and equity and client service") of the Australian Qualifications Training Framework (AQTF) Standards for Registered Training Organisations. This will involve promoting:

- Equitable access to fair allocation of resources.
- The right to equality of opportunity without discrimination.
- Access for all people to appropriate quality vocational education, training and employment programs and services, and
- Increased opportunity for people to participate in vocational education and training, and in associated decisions, which affect their lives.

Code No: QES001
Conduct In-service Safety Inspection and Testing of Electrical Equipment (other than fixed wired equipment)

Descriptor: In-service safety inspection and testing of electrical equipment as defined in AS/NZS 3760, excluding electrical work as defined under Electricity Legislation.

Specific unit outcomes:

This document specifies procedures for the safety inspection and testing of single and polyphase electrical equipment, (other than fixed wired equipment) which is in-service, or available for hire or resale, and which is designed for connection by a flexible cord and plug to a low voltage supply. It applies also to cord extension sets, electrical portable outlet devices(EPODs), portable residual current devices, residual current devices (RCDs)(socket outlet type and fixed switchboard type) and portable isolation transformers.

Elements		**Performance criteria** **(Italicised words are defined in the Range Statement overleaf).**	
SIT.001A	Plan and prepare to inspect and test electrical equipment, flexible cable(s)/ cord(s) and plug(s)	1.1	Work is planned and prepared to ensure *OH&S policies and procedures* are accessed and followed, and the work is appropriately sequenced in accordance with *requirements*
		1.2	*Condition and ratings* under which the electrical equipment, flexible cable/cord and plug is to operate is determined from *requirements* and in consultation with *appropriate personnel* as well as any written instruction
		1.3	Electrical equipment, flexible cable/cord and plugs are compared with standards and *requirements* for the *condition* and *rating*
		1.4	Materials necessary to complete the work are obtained in accordance with *established procedures* and checked against job *requirements*
		1.5	*Equipment and testing devices* needed to carry out the work are obtained in accordance with *established procedures* and checked for correct operation and safety

SIT.002A	Inspect and test electrical equipment, cord(s) and plug(s)	2.1	*OH&S policies and procedures* are followed
		2.2	Electrical equipment, flexible cable(s)/cord(s) and plug(s) are inspected in accordance with *requirements* and to *established procedures* to check for damage and ensure electrical integrity
		2.3	Electrical equipment, flexible cable(s)/cord(s) and plug(s) are tested for insulation and continuity in accordance with *requirements* and to *established procedures* to ensure electrical integrity
SIT003A	Action inspection and testing results	3.1	Determination of compliant or non- compliant equipment is made to *requirements* and *established procedures*
		3.2	Status report(s) of inspection and testing results are completed and *notified* in accordance with *requirements* and *established procedures*

Range statement

General

Generic items in this unit are shown in italics, *eg. established procedures*. The definition and intended scope covered by generic items forms an integral part of this range statement. These are listed below:

In-service

For the purposes of this Training Product, is any electrical equipment that is currently operational and is in use by an organisation.

Appropriate personnel –

Individuals with responsibilities for co-ordination, design, installation, maintenance, production or servicing activities. Personnel designated by an organisation or enterprise. These may include:-

- Site managers
- Project managers
- Engineers and technicians
- Technical experts
- Line managers/supervisors
- Regulatory personnel
- Team leaders

Conditions and ratings –

Relates to electrical equipment flexible cables and plugs that are selected in accordance with Australian and New Zealand Standards and technical data including factors such as:

- Voltage rating
- Current rating
- Sheathing requirement
- Frequency (Hz)
- Insulation (Class I and II equipment)
- Length of cable
- Pin configuration
- Control circuits (non-electrical work eg pendant control)
- Environmental conditions
- Weather proofing
- Fitting types – shielding, anchorage, earthing and polarity

Established procedures –

Formal arrangements of an organisation, enterprise or statutory authority of how work is to be done. These may include, for example:

- Quality assurance systems incorporating, for example:
  - Specifications, requirements and procedures
  - Work orders / instructions
  - Reporting procedures
  - Improvement mechanisms
  - Compliance requirements
  - Safety management
- Work clearance systems incorporating, for example:
  - Work permits
  - Monitoring and clearance procedures
  - Isolation procedures
- OH&S practices
- Procedures for operating safety systems, operating plant and equipment and reporting work activities
- Maintenance, modification or supply of relevant schematic drawings and technical data
- Arrangements for dealing with emergency situations

Notification (notified) –

Can include verbal, written, electronic or recorded information at completion of work which may be required to be completed in accordance with *established procedures.*

OH&S policies and procedures –

Arrangements of an organisation or enterprise to meet their legal and ethical obligations of ensuring the workplace is safe and without risk to health. This may include:

- Risk assessment of hazards or environments/mechanisms
- Implementation of safety regulations
- Safety training
- Safety systems incorporating,
  - Work clearance procedures
  - Isolation procedures
  - Monitoring/testing procedures
  - Use of protective equipment and clothing
- Use of codes of practice or advisory standards

Requirements

That to which equipment and procedures and their outcomes must conform and includes statutory obligations, legislation and *standards* called-up by legislation. Requirements may also include:

- Regulations
- Codes of practice or advisory standards
- Job specifications
- Transport documentation
- *Standards* relevant to inspection and testing of electrical equipment.
- Access to and interpretation of procedures and work instructions
- Quality assurance systems

Standards

Technical documents which set out specifications and other criteria for equipment, materials and methods to ensure they consistently perform as intended. The *standards* referred to in this competency standard are those published by Standards Australia or in joint venture with Standards New Zealand. Competency in the use of other technical standards may be required in industries not restricted to Australian *requirements*. For example, shipping

and off-shore petroleum industries are subject to standards agreed to by underwriters and enterprises or some other international convention.

Scope of work

This unit describes inspection and testing competency within the scope of work defined in specific unit outcomes (refer to page 11).

Conditions specified

This unit is **not** intended to cover:

- competencies associated with the attachment or repair of cord(s) to plug(s);
- competencies associated with disconnecting or reconnecting electrical equipment;
- competencies associated with fixed wired equipment; nor
- the repair of electrical equipment, whether it is non-electrical or electrical repair work (example of non-electrical repair work is changing a chuck on a drill; example of electrical repair work is changing a plug top).

Currency in unit of competence

In order to maintain currency in this Unit, on-going competency development is to occur. This would include keeping abreast of any changes in legislation, regulations, standards, procedures, technology and the like related to the scope and application of this unit.

Evidence guide

This Evidence guide is intended to include components defined within the Range Statement. Terms in italics, e.g. *established procedures*, are defined within the Range Statement.

Critical aspects of evidence

Achieving competence

Achievement of this unit of competence is based on each of the following conditions being met:

- demonstrating consistent performance for each element of the unit across specified performance criteria; autonomously and to requirements.
- meeting the performance criteria associated with each element of competence by employing the techniques, procedures, information and resources available.
- demonstrating an understanding of the underpinning knowledge and skills identified for the scope of work undertaken in the section of this unit titled Underpinning knowledge. (refer to page 16).

Reporting requirements

The reporting of the judgments about competence must be in the context of the individual unit being assessed. Regulatory requirements in individual jurisdictions (where applicable) may require recording of additional information. Recognition of knowledge and skills transfer may be maximised by recording and issuing transcripts covering additional information. This could be detailed statements about the achievement of knowledge and skills. Any additional reporting is a matter for negotiation between the RTO and its clients.

Maintaining competence

Consideration shall be given to periodic evaluations of skills and knowledge within this unit that are critical to safety, operation of plant and equipment and the like, particularly where relevant skills and knowledge are not frequently practiced within each 12 month period after initial training and assessment and based on assessment against this unit of competency.

Context of assessment

Competency will be determined on evidence of having performed specified performance criteria; autonomously and to requirements.

Interdependent assessment of units

There is no interdependent assessment of units of competence.

Underpinning knowledge

This section specifies the knowledge and skills required to underpin the elements and performance criteria relevant to the unit. This with other aspects of evidence would ensure that an individual is able to transfer and apply such knowledge and skills to new situations and environments within the scope for which competency is being sought.

Underpinning knowledge and skills include but are not limited to:

GENERAL

Fundamental electrical concepts and principles (eg current; voltage; resistance etc)

Occupational Health and Safety obligations/duty of care.

- Action resulting from compliant and non-compliant equipment
- Frequency of inspection and testing
- Employer/worker obligation/Duty of Care

Flexible Cable types, colour codes; cable ratings

Flexible cords for use with single and poly phase appliances/apparatus (ie types and loading; service duty etc)

Plugs for use with single and poly phase applications/apparatus (eg types and loading; IP rating etc)

Knowledge of test equipment

Safe use of test equipment

Illegal and unsafe work practices (eg opening up or attaching plugs when not licensed to do so)

Maintenance of test equipment

Inspections - visual and mechanical (connection requirements)

Testing (eg continuity and insulation measurements and requirements)

Interpretation of inspection and testing results

Maintenance of competency through employer obligations

SPECIFIC

Inspection (Visual)

Inspection of electrical equipment must be in accordance with AS/NZS 3760.

Testing

All testing type, instrumentation and conditions must be in accordance with AS/NZS 3760.

Relationship between Units of Competency and Key Competencies

The Key Competencies

A Collecting, analysing and organising information

The capacity to locate information, sift and sort information in order to select what is required and present it in a useful way, and evaluate both the information itself and the source and methods used to obtain it.

B Communicating ideas and information

The capacity to communicate effectively with others using the range spoken, written, graphic and other non-verbal means of expression.

C Planning and organising activities

The capacity to plan and organise one's own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance.

D Working with others and in teams

The capacity to interact effectively with other people both on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a shared goal.

E Using mathematical ideas and techniques

The capacity to use mathematical ideas, such as number and space, and techniques, such as estimation and approximation, for practical purposes.

F Solving problems

The capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome.

G Using technology

The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.

Performance levels:

Performance Level 1 describes the competence needed to undertake activities efficiently and with sufficient self-management to meet the explicit requirements of the activity and to make judgements about quality of outcome against established criteria.

Performance level 2 describes the competence needed to manage activities requiring the selection, application and integration of a number of elements, and to select from established criteria to judge quality of process and outcome.

Performance level 3 describes the competence needed to evaluate and reshape processes, to establish and use principles in order to determine appropriate ways of approaching activities, and to establish criteria for judging quality of process and outcome.

Matrix showing the relationship between the Units and Key Competencies

Unit of Competency Title	**Key Competency**						
	A	**B**	**C**	**D**	**E**	**F**	**G**
Conduct In-service Safety Inspection and Testing Electrical Equipment	1	1	1	1	1	1	1