Australian Government

Department of Education, Employment and Workplace Relations

UEENEEP005B Disconnect and reconnect 3.3 kV electric propulsion components of self-propelled earth moving vehicles

Release: 1

UEENEEP005B Disconnect and reconnect 3.3 kV electric propulsion components of self-propelled earth moving vehicles

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1**)

1.1) **Descriptor**

This unit covers isolating, disconnecting and reconnecting HV electric propulsion components on engine driven, self-propelled earth moving vehicles under the restrictions of designated electrical equipment and conditions specified, operating at 3,300 volts. It encompasses working safely, identifying circuit and isolation arrangements, following isolation procedures, selecting and using HV testing and measuring devices, terminating and connecting HV cables and conductors, safety testing and reporting.

Application of the Unit

Application of the Unit **4**)

This unit applies to any formal recognition for this standard at the aligned AQF 3 level or higher.

Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit may require a license to practice in the workplace subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Pre-Requisites

Prerequisite Unit(s) **2)**

2.1) Competencies

Competencies needed for mechanical maintenance of HV electric propulsion components off-road earth moving trucks.

Employability Skills Information

Employability Skills	**3)** This unit contains Employability Skills The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT		PERFORMANCE CRITERIA	
1	Prepare for disconnection or reconnection.	1.1	Designated electrical equipment to be replaced is identified and purpose of the work to be carried out is verified with the authorised personnel.
		1.2	Occupational health and safety and other statutory requirements and established procedures are followed.
		1.3	Work clearances are obtained; isolation and disconnection procedures are followed in accordance with established procedures.
2	Disconnect designated electrical equipment.	2.1	Relevant electrical characteristics and protection specifications are identified.
		2.2	Where appropriate on -board cables are identified and marked and connection sequence recorded.

ELEMENT	PERFORMANCE CRITERIA	
	2.3	Designated electrical equipment is inspected for damage to components, and conclusions verified with authorised personnel.
	2.4	Visual checks of the designated electrical equipment and associated wiring are carried out in accordance with established procedures to detect any abnormal or obvious damage or fault.
	2.5	Isolated equipment is confirmed as de-energised.
	2.6	Approval is obtained in accordance with established procedures from appropriate personnel, before any contingencies are implemented.
	2.7	On -board cables are, where appropriate, disconnected without unnecessary damage to terminals or components.
	2.8	Designated electrical equipment is dismantled, removed and/or replaced in accordance with requirements to the extent necessary for disconnection, and without unnecessary damage.
	2.9	Designated electrical equipment parts and/or associated components are stored appropriately to protect them against damage.
	2.10	Repairs, where appropriate, to the removed equipment are carried out in accordance with requirements and established procedures.
3 Reconnect designated electrical equipment.	3.1	Cables, where appropriate, are re-connected without damage to terminals or components.
	3.2	Connections are checked and tested to confirm correct polarity and continuity.
	3.3	Designated electrical equipment is assembled and checked to comply with the relevant Standards for the given technique.
	3.4	Designated electrical equipment is tested for safety and correct operation.

ELEMENT	PERFORMANCE CRITERIA
4 Prepare designated electrical equipment for return to service.	4.1 Isolation devices are removed and work clearance is released in accordance with established procedures.
	4.2 Documentation is completed in accordance with established procedures.
	4.3 Operational personnel are notified when designated electrical equipment is ready for return to service in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and disconnecting and reconnecting 3.3 kV electric propulsion components of self-propelled earth moving vehicles.
All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.
The extent of the essential knowledge and associated skills (EKAS) required is given in Volume 2 - Part 2.2 EKAS. It forms an integral part of this unit.

2.18.1 Occupational Health and Safety principles

2.18.2 Electrical safe working practices

2.19.32 Disconnect and reconnect HV electric propulsion components

2.19.39 Produce Status Reports using established procedures

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.
The Evidence Guide forms an integral part of this Unit and shall be used in conjunction with all components parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)
Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. In some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.
Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.
The critical safety issues inherent in working with electricity, electrical equipment, gas or any other hazardous substance/material present a challenge for those determining competence. Sources of evidence need to be 'rich' in nature to minimise error in judgment.
Activities associated with normal everyday work influence decisions about how/how much the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

EVIDENCE GUIDE

Critical aspects of evidence required to demonstrate competency in this unit

9.2)
Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines - UEE07'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the performance criteria and range statement
  - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
  - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
  - Demonstrate an appropriate level of skills enabling employment
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Disconnect and reconnect 3.3 kV electric propulsion components of self-propelled earth moving vehicles as described in 8) and including:

    A Preparing to disconnect or reconnect of HV electric propulsion components of off-road self-propelled earth moving vehicles operating at 3,300 volts

    B Disconnecting of HV electric propulsion components of off-road HV electric propulsion components on engine driven, self-propelled earth

EVIDENCE GUIDE

moving vehicles operating at 3,300 volts

C Repairing in accordance with established procedures HV electric propulsion components of off-road HV electric propulsion components on engine driven, self-propelled earth moving vehicles operating at 3,300 volts

D Reconnecting of HV electric propulsion components of off-road self-propelled earth moving vehicles operating at 3,300 volts

E Preparing of HV electric propulsion components of off-road HV electric propulsion components on engine driven, self-propelled earth moving vehicles operating at 3,300 volts for return to service

F Providing status report(s);

G Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items

Note:
Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

EVIDENCE GUIDE

Context of and specific resources for assessment

9.3)
This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.
- Workplace evidence to be produced in an industry/regulator approved recording system (logbook) confirming skills development under appropriate supervision

These should be part of the formal learning/assessment environment.
Note:
Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to disconnecting and reconnecting 3.3 kV electric propulsion components of self-propelled earth moving vehicles.

Method of assessment

9.4)
This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.
Note:
Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires assessment in a structured environment which is intended primarily for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

Range Statement

RANGE STATEMENT

8) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to disconnecting and reconnecting of HV electric propulsion components of HV electric propulsion components on engine driven, self-propelled earth moving vehicles operating at 3,300 volts.

Note:
Limitations of this unit. This unit does not cover the knowledge and skills necessary for work:
a) Where high fault currents are possible,
b) On complex electrical work;
c) Associated with other than to disconnect and reconnect of HV electric propulsion components of off-road HV electric propulsion components on engine driven, self-propelled earth moving vehicles earth moving vehicles operating at 3,300 volts
d) Nor competencies associated with fixed wiring

Safe Working. Safe procedures for working within in the scope of this unit shall be in accordance with AS/NZS 4836:2001 'Safe working on low-voltage electrical installations.'

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not Applicable

2.2) Literacy and numeracy skills

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Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3

Competency Field

Competency Field **5)**

Restricted and Specialisations