



**Australian Government**

# **UEPMNT314 Maintain hydro turbines**

**Release: 1**

# UEPMNT314 Maintain hydro turbines

## Modification History

**Release 1.** This is the first release of this unit of competency in the UEP Generation Training Package.

## Application

This unit involves the skills and knowledge required to maintain hydro turbines including their removal from service and the completion of overhauls.

An overhaul includes a thorough examination of the hydro turbine, with repairs or changes made, if required. This may mean taking apart the hydro turbine to examine and repair it.

Competency in this unit requires the ability to plan work, disassemble a hydro turbine, inspect a hydro turbine's components, repair a hydro turbine and/or its' components and to report on all completed work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or onsite.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

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

### **Note: Workplace practice**

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

## Pre-requisite Unit

There are no prerequisite units.

## Competency Field

Maintenance

## Unit Sector

Electricity generation

## Elements and Performance Criteria

### ELEMENTS

### PERFORMANCE CRITERIA

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

#### **1 Plan and prepare for work**

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specifications
- 1.4** Relevant plans, drawings and manuals are selected and interpreted, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected, in accordance with workplace procedures, for compliance with job specifications
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified, and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

#### **2 Disassemble hydro turbine**

- 2.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 2.2** Hydro turbine is disassembled, in accordance with workplace procedures and manufacturers' specifications
- 2.3** Hydro turbine components are removed in order of priority, in accordance with workplace procedures and manufacturers' specifications
- 2.4** Disassembly is carried out to facilitate reassembly, in

|                                              |            |                                                                                                                                                                                 |
|----------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              |            | accordance with workplace procedures                                                                                                                                            |
|                                              | <b>2.5</b> | Components are measured, and clearances are taken, to determine conformity to manufacturers' limits, and to ensure assembly is in accordance with manufacturers' specifications |
|                                              | <b>2.6</b> | Measurements and clearances are recorded, in accordance with workplace procedures and manufacturers' specifications                                                             |
| <b>3 Inspect hydro turbine components</b>    | <b>3.1</b> | Components are cleaned and inspected, in accordance with workplace procedures                                                                                                   |
|                                              | <b>3.2</b> | Faults are identified and recorded, in accordance with workplace procedures                                                                                                     |
|                                              | <b>3.3</b> | New components are inspected for compliance to manufacturers' specifications and hydro turbine requirements                                                                     |
|                                              | <b>3.4</b> | Components are prepared for assembly, in accordance with workplace procedures                                                                                                   |
| <b>4 Repair hydro turbine and components</b> | <b>4.1</b> | Repairs are carried out, in accordance with workplace procedures                                                                                                                |
|                                              | <b>4.2</b> | Repairs are tested, and results analysed, to ensure conformance to manufacturers' specifications, in accordance with workplace procedures                                       |
|                                              | <b>4.3</b> | Data from testing is recorded, in accordance with workplace procedures                                                                                                          |
| <b>5 Complete work</b>                       | <b>5.1</b> | Work is completed, and appropriate personnel are notified, in accordance with workplace procedures                                                                              |
|                                              | <b>5.2</b> | Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures                                                                           |
|                                              | <b>5.3</b> | Tools and equipment are cleaned, maintained and stored, in accordance with workplace procedures                                                                                 |
|                                              | <b>5.4</b> | Work completion details are finalised, in accordance with workplace procedures                                                                                                  |

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

## **Range of Conditions**

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

## **Unit Mapping Information**

This unit replaces and is equivalent to UEPMNT314B Maintain hydro turbines.

## **Links**

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

# Assessment Requirements for UEPMNT314 Maintain hydro turbines

## Modification History

**Release 1.** This is the first release of this unit of competency in the UEP Generation Training Package.

## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
  - emergency procedures
  - identifying hazardous materials
  - safe working practices
  - using risk control measures
- communicating with personnel
- completing work as per scheduling requirements
- determining permit to work requirements
- diagnosing and testing hydro turbines and components
- disassembling a hydro turbine using utilising removal techniques and procedures inspecting hydro turbine components including selecting and using components
- interpreting manufacturers' specifications and manuals
- maintaining hydro turbines using overhaul, maintenance and replacement techniques and procedures
- planning for hydro turbine maintenance work
- recognising worn, damaged or faulty components
- repairing hydro turbines and components
- using precision measuring equipment
- working with tools

## Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- data recording techniques
- diagnostic and testing techniques

- hydro turbines supporting equipment
- hydro turbines types and characteristics
- isolations
- legislation, industry standards, codes of practice and regulations
- maintenance of hydro turbines
- manufacturers' specifications and manuals
- permit to work system
- power generation plant and equipment and its location
- precision measuring equipment
- tools
- typical arrangements of hydro power production plant
- WHS/OHS legislated requirements including:
  - emergency procedures
  - identifying hazardous materials
  - safe working practices
  - using risk control measures
- workplace documentation
- workplace policies and procedures

## Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions. Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

## Links

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