



**Australian Government**

# **AURRTE012 Analyse and evaluate faults in light marine engine and powerhead systems**

**Release: 1**

# AURRTE012 Analyse and evaluate faults in light marine engine and powerhead systems

## Modification History

Release	Comment
Release 1	New unit of competency.

## Application

This unit describes the performance outcomes required to analyse and evaluate faults in light marine engine and power head systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the marine service and repair industry on inboard or outboard marine vessels.

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

## Competency Field

Marine

## Unit Sector

Technical - Engines

## Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions

<p><b>Elements</b></p> <p>Elements describe the essential outcomes.</p>	<p>Performance Criteria</p> <p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.</p>
	<p>1.2 Specifications for light marine engine and powerhead system are sourced and interpreted</p> <p>1.3 System faults, deficiencies or discrepancies are identified and confirmed</p> <p>1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and <b><i>safety and environmental requirements</i></b></p>
<p>2. Prepare for analysis and evaluation</p>	<p>2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation</p> <p>2.2 <b><i>Analytical and evaluative methodology</i></b> is developed or identified from technical information</p> <p>2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures</p> <p>2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use</p> <p>2.5 Engine and power head system and components are prepared for the diagnostic process</p>
<p>3. Carry out failure analysis</p>	<p>3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures</p> <p>3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements</p> <p>3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes</p> <p>3.4 Analytical findings and results are assessed against evaluation criteria</p> <p>3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements</p>
<p>4. Make recommendations</p>	<p>4.1 Options for responding to the objective are determined from further research of technical support information</p> <p>4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications</p> <p>4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method</p>
<p>5. Complete work</p>	<p>5.1 Final inspection is made to ensure work is to workplace</p>

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processes	expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

<b>Skills</b>	<b>Description</b>
Learning skills to:	<ul style="list-style-type: none"> <li>apply learning and processes to different situations.</li> </ul>
Reading skills to:	<ul style="list-style-type: none"> <li>research, organise and interpret technical information relating to light marine engine and power head systems.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation when reporting failure analysis findings</li> <li>document and complete reports.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.</li> </ul>
Planning and organising skills to:	<ul style="list-style-type: none"> <li>plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.</li> </ul>
Technology skills to:	<ul style="list-style-type: none"> <li>use specialised light marine engine and power head diagnostic equipment.</li> </ul>

## Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<p><b><i>Safety and environmental requirements</i></b> must include:</p>	<ul style="list-style-type: none"> <li>• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:             <ul style="list-style-type: none"> <li>• lifting and supporting engines</li> <li>• running engines, including working with:                 <ul style="list-style-type: none"> <li>• exhaust fumes</li> <li>• rotating shafts</li> </ul> </li> </ul> </li> <li>• environmental requirements, including procedures for trapping, storing and disposing of fluids released from engine and power head systems.</li> </ul>
<p><b><i>Analytical and evaluative methodology</i></b> must include:</p>	<ul style="list-style-type: none"> <li>• diagnostic process, sequence, tests and testing equipment.</li> </ul>

## Unit Mapping Information

Equivalent to AURRTE5012 Analyse and evaluate light marine engine and powerhead system faults

## Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>