



Australian Government

Department of Education, Employment and Workplace Relations

SFISHIP205C Maintain marine plant

Release: 1

SFISHIP205C Maintain marine plant

Modification History

Not Applicable

Unit Descriptor

<p>Unit descriptor</p>	<p>This unit of competency involves routinely maintaining, restoring and repairing mechanical plant onboard a vessel according to maintenance plans and instructions or as a result of an unacceptable or unscheduled variation. This unit also covers actions required to maintain a vessel in survey.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit. Therefore it will be necessary to check with the relevant state or territory regulators for current licensing, legislative or regulatory requirements before undertaking this unit.</p>
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Application of the Unit

<p>Application of the unit</p>	<p>This unit has application to aquaculture, fishing operations and fisheries compliance where use is made of small vessels and a maritime regulatory certification is not required. For advice on certifications refer to the current TDM07 Maritime Training Package.</p> <p>The unit of competency involves the maintenance of marine mechanical plant and systems, including auxiliary machinery, propulsion plant and service systems, such as LPG and fire hose, including associated pipework and fittings.</p> <p>All enterprise or workplace procedures and activities are carried out according to <i>relevant government regulations, licensing and other compliance requirements</i>, including <i>occupational health and safety (OHS) guidelines</i> and <i>ecologically sustainable development (ESD) principles</i>.</p> <p>Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate <i>personal protective equipment (PPE)</i> is selected, checked, used and maintained.</p>
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Comply with requirements for survey	1.1. Complete inventory survey documentation is maintained and accessible to appropriate authorities. 1.2. Applications for renewal of and extensions to certification are timely and ensure continuous validity. 1.3. State of survey items and equipment (with respect to certificate conditions) reflect continuing effective programs of tests, checks and maintenance. 1.4. Arrangements made for survey are timely and compliant. 1.5. Survey certification reflects adherence to procedures where validity may be affected by damage, alterations or additions to the vessel or equipment.
2. Determine the sequence of work required to restore and maintain mechanical plant	2.1. Defined work sequence adheres to the overall <i>maintenance plan specification</i> . 2.2. Maintenance activities are correctly planned. 2.3. Sequence and scope of the planned work is complete and within the <i>requirements</i> of agreed timeframe. 2.4. Activities are negotiated with skipper or owner to complete the work requirements to schedule, minimise downtime and reduce disruption to production schedules. 2.5. Anticipation of <i>restrictions and variances</i> to work schedules are realistic and made at appropriate times. 2.6. Action planned leads to the restoration of plant by the most suitable method consistent with available resources.
3. <i>Prepare</i> work area and resources for engineering maintenance	3.1. Equipment and materials selected are safe, serviceable and of the correct type and quantity required to carry out the tasks. 3.2. Restrictions and variances to resources are accurately identified, promptly recorded and reported. 3.3. Material and equipment are safely handled, stored and secured. 3.4. Work area, machinery and equipment are confirmed as <i>safe</i> for work to proceed. 3.5. Work area is accessible and free from obstruction for receiving and storing materials and resources needed for the work to proceed.

ELEMENT	PERFORMANCE CRITERIA
	3.6. Specifications, plans, materials and equipment appropriate to the task are available at the enterprise according to schedule.
4. <i>Service and maintain</i> mechanical systems to schedule	4.1. Maintenance is carried out safely. 4.2. Sequence and scope of work conforms to routine maintenance and servicing plans and schedules. 4.3. Equipment and components are correctly cleaned and prepared for the required inspection or maintenance to be carried out. 4.4. <i>Variance</i> from plans and schedules is agreed prior to continuing. 4.5. <i>Settings</i> are accurate and complete to specification. 4.6. Static checks and tests are completed satisfactorily. 4.7. Work practices and techniques ensure completion of activity to specification, within an acceptable timeframe. 4.8. Discarded materials are disposed of and recycled in an environmentally responsible manner.
5. Rectify unacceptable or unscheduled variation to mechanical plant	5.1. Maintenance is planned and carried out safely. 5.2. Procedures and equipment for dismantling and reassembly conform to <i>technical specification</i> and agreed work plan. 5.3. Dismantled parts are safely and correctly stored, handled and cleaned. 5.4. Appropriate method for restoring equipment or systems is selected, taking identified operational and physical <i>constraints</i> into account. 5.5. Defective parts are repaired economically and to defined standards using correct engineering practices. 5.6. Replacement parts meet system and equipment manufacturer's specifications. 5.7. Product and components are restored to specification within the agreed time schedules and quality requirements. 5.8. Static checks and tests are correctly completed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- preparing and carrying out maintenance on marine engineering systems, including:
 - control and instrumentation
 - electrical generation transmission systems
 - electronic equipment
 - mechanical equipment and systems
- preparing and carrying out maintenance on mechanical plant and systems incorporating pipework and all mechanical components, including:
 - compressed air systems
 - deck machinery
 - flammable gas systems
 - fuel systems
 - hydraulic systems
 - lubrication systems
 - prime movers and associated systems
 - refrigerant systems
 - safety equipment and fixed systems
 - water systems.

Literacy skills used for:

- reading and completing survey documentation for company and authorities
- reading and recording operating parameters
- reading manufacturer technical information
- reading statutory regulations.

Numeracy skills used for:

- estimating the time required to complete the planned schedule.

Required knowledge

- function of the component/system to be maintained and the affect it has on related components/systems
- how proposed preparation will affect other personnel, equipment and departments
- information relating to:
 - acceptable types of work methods
 - anticipated timeframes
 - company procedures for survey and validation of certification, including

REQUIRED SKILLS AND KNOWLEDGE

- seeking extension
- compliance with procedures relating to survey and validation of certification, including seeking extension
- current methods of preparation
- environmental risk management practices related to maintenance
- factors which may cause preparations to be disrupted and contingency measures to deal with them
- how particular maintenance activities will affect other personnel, equipment or departments
- sources of information on detailed survey and certification requirements
- survey requirements
- systems for monitoring effectiveness of work
- work objectives
- maintenance objectives, priorities, and vessel and company maintenance plans
- legislation relating to work methods, environmental protection and OHS
- principles and methods relating to:
 - communicating with personnel on status of work
 - environmental risk management associated with maintenance of marine plant
 - establishing a safe working environment
 - quality assurance and control of maintenance work
 - use of resources during maintenance.

Evidence Guide

EVIDENCE GUIDE	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
Overview of assessment	
Critical aspects for assessment evidence required to demonstrate competence in this unit	<p>Assessment must confirm the ability to:</p> <ul style="list-style-type: none"> • plan and carry out maintenance and repairs to mechanical plant onboard a vessel to ensure that the vessel remains operational and in survey, including: <ul style="list-style-type: none"> • carry out pre-commissioning tests and inspections • check completeness and validity of documentation • correctly choose and handle equipment and materials • ensure maintenance of survey items and arrangements for survey are met • identify requirements from schedule • identify restrictions to maintenance • plan activities to meet requirements • plan and conduct maintenance to achieve minimal environmental impact • prepare the work area and resources. <p>Assessment must confirm knowledge of:</p> <ul style="list-style-type: none"> • alternative work activities • efficiency of various methods • functions of the components/systems • safe and environmentally responsible procedures.
Context of and specific resources for assessment	<p>Assessment is to be conducted at the workplace or in a simulated work environment.</p> <p>Resources may include:</p> <ul style="list-style-type: none"> • maintenance tools and equipment • operation procedures and policies • operational machinery and equipment • safety equipment • service equipment and maintenance instructions

EVIDENCE GUIDE	
	<ul style="list-style-type: none"> spares and consumables.
Method of assessment	<p>The following assessment methods are suggested</p> <ul style="list-style-type: none"> observation of practical demonstration practical exercises project work written or oral short-answer testing.
Guidance information for assessment	<p>This unit may be assessed with SFISHIP211C Prepare for maintenance, or holistically with other units in a qualification.</p>

Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p><i>Relevant government regulations, licensing and other compliance requirements</i> may include:</p>	<ul style="list-style-type: none"> business or workplace operations, policies and practices ESD principles, environmental hazard identification, risk assessment and control OHS hazard identification, risk assessment and control.
<p><i>OHS guidelines</i> may include:</p>	<ul style="list-style-type: none"> appropriate workplace provision of first aid kits and fire extinguishers codes of practice, regulations and/or guidance notes which may apply in a jurisdiction or industry sector enterprise-specific OHS procedures, policies or standards hazard and risk assessment of workplace and maintenance activities and control measures OHS training register safe lifting, carrying and handling techniques, including manual handling, and the handling and storage of hazardous substances

RANGE STATEMENT	
	<ul style="list-style-type: none"> • safe systems and procedures for outdoor work, including protection from solar radiation, fall protection, confined space entry and the protection of people in the workplace • systems and procedures for the safe maintenance of property, machinery and equipment, including hydraulics and exposed moving parts • the appropriate use, maintenance and storage of PPE.
<i>ESD principles</i> may include:	<ul style="list-style-type: none"> • controlling effluents, chemical residues, contaminants, wastes and pollution • improving energy efficiency • increasing use of renewable, recyclable and recoverable resources • minimising noise, dust, light or odour emissions • reducing emissions of greenhouse gases • reducing use of non-renewable resources • reducing energy use • reducing organisms from escaping into environment • undertaking environmental hazard identification, risk assessment and control.
<i>PPE</i> may include:	<ul style="list-style-type: none"> • buoyancy vest or personal floatation device (PFD) • hard hat or protective head covering • hearing protection, ear plugs, ear muffs • insulated protective clothing for freezers or chillers and refrigeration units • non-slip and waterproof boots (gumboots) or other safety footwear • personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB) • protective eyewear, glasses and face mask • protective outdoor clothing for tropical conditions • respirator or face mask • safety harness • sun protection (e.g. sun hat, sunscreen and sunglasses) • waterproof clothing (e.g. wet weather gear).

RANGE STATEMENT	
<i>Maintenance</i> may include:	<ul style="list-style-type: none"> • marine mechanical plant and systems, including: <ul style="list-style-type: none"> • auxiliary machinery • propulsion plant • service systems, LPG and fire hose, including associated pipework and fittings • survey requirements: <ul style="list-style-type: none"> • fire extinguisher (water based and chemical) • steering gear check • techniques for restoration, including: <ul style="list-style-type: none"> • construct • dismantle • fabricate • insulate • recondition • repair • replace • techniques for scheduled maintenance and servicing, including: <ul style="list-style-type: none"> • minor adjustments • operational changeovers • replacement of consumables • replacement of faulty components.
<i>Specification</i> may include:	<ul style="list-style-type: none"> • breakdown procedures • master schedule • planned maintenance • unplanned maintenance.
<i>Requirements</i> may include:	<ul style="list-style-type: none"> • carrying out and completing restoration or maintenance, waste/drainage containment • preparation of resources • preparation of the plant • preparation of the work area.
<i>Restrictions and variances</i> caused by:	<ul style="list-style-type: none"> • operational requirements • other maintenance • resources.
<i>Prepare</i> may include:	<ul style="list-style-type: none"> • selecting: <ul style="list-style-type: none"> • documentation • emergency services and equipment

RANGE STATEMENT	
	<ul style="list-style-type: none"> • equipment • materials • oil or fuel spill absorbent materials • resources • tools • waste containment • ensuring the serviceability of: <ul style="list-style-type: none"> • equipment • machinery • tools • work area: <ul style="list-style-type: none"> • access • atmosphere • lifting plant • lighting • isolation • machinery • machinery preparation • provision of alternative services.
<i>Safe</i> by recognition of hazards to:	<ul style="list-style-type: none"> • environment • personnel • plant, equipment and vessel.
<i>Service and maintain</i> may include:	<ul style="list-style-type: none"> • minor adjustments • replacement of consumables • replacement of lifted components • scheduled checks • tests measurements and inspections.
<i>Variance</i> may include:	<ul style="list-style-type: none"> • components • consumables • methods and techniques.
<i>Settings</i> may include:	<ul style="list-style-type: none"> • adjustable control inputs and outputs • clearances • tension • torques.
<i>Technical specifications</i> may include:	<ul style="list-style-type: none"> • manufacturer manuals • manufacturer plans and drawings • statutory requirements • supervisor instructions.

RANGE STATEMENT*Constraints* may include:

- availability of spares
- economical restraints
- equipment design
- equipment position
- minimal use of chemicals (e.g. acid, chlorine and detergents)
- operational requirements for the equipment
- safety requirements
- weather or sea conditions.

Unit Sector(s)

Unit sector	Vessel operations
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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